TECHNOLOGY DEPT!

It's Important to Know In Time'

Member Associated Business Papers, Inc.; Audit Bureau of Circulations.

The Newspaper of the Industry

Air Conditioning & REFRIGERATION NEWS

Production Tools for Victory

AN INTERNATIONAL INSTITUTION ★ SUBSCRIBERS ALL OVER THE WORLD ★

Technical Governmental

'Written To Be Read on Arrival'

Issued Every Monday Detroit, Michigan

DEC. 21, 1942

Vol. 37, No. 16, Serial No. 718
Established 1926.

Reentered as second-class matter October 3, 1936 at the post office at Detroit, Michigan, under the Act of March 3, 1879.
Trade Mark Registered U. S. Patent Office. Copyright, 1942, by Business News Publishing Co.

PUBLIC LIBRARY JAN 2 1943 DETROIT

N. E. Sta., Detroit, Mich.

Inside Dope

By George F. Taubeneck

ANYONE who tries to read out loud what he sees in the Crystal Ball these days is undoubtedly a dope, so perhaps this column is well named.

Nevertheless, the most common request we receive these days is for crystal-gazing. People don't seem too much disposed to hold you responsible for your forecasts—they just want to hear 'em. It would appear as if the whole country has had a revival of interest in the fortune teller as a prime entertainment medium. So, "in response to popular demand" . . .

The War

Don't place any bets on the length of the war. Nobody can estimate Hitler's remaining strength, or the degree to which Japan has been able to capitalize on her newly conquered resources.

The situating is something like that of the bride who asked her doctor how long it took for a baby to arrive.

"Well," he answered, "the first is likely to come any time. After that it takes nine months."

Some of the most competent authorities believe Germany can be forced to submit in nine months. (It must be remembered, also, that whenever Geramny folds, she has always folded suddenly. Like chess players who sometimes end a game after a few moves—when it becomes obvious to their expert minds that one is going to be checkmated—the Germans usually quit when they see that the game is up).

Japan, however, is a different story. Most authorities on the Japanese agree with Ambassador Grew that every Japanese detachment everywhere may have to be subdued piecemeal.

Big hope of mass bombing. If Major de Seversky is right, mass bombing could end the war in 18 months. If he is wrong, it will take longer.

Darlan

Whether or not it was accidental or premeditated, the capture of Darlan by Eisenhower was probably the greatest stroke of luck the United Nations have yet had. (And about time our side had some luck—most of the luck has run the other way).

His "cease firing" order in French Africa, his handing over of strongly-defended Dakar, probably cut from four to six months off the length of the war. It was comparable in effect to the swift Belgian surrender.

Reason why our progress has been slow in Tunisia is that when plans were laid months ago, a long campaign in French Africa was figured on—Darlan wasn't in the picture.

(Concluded on Page 29, Column 1)

Henderson of ACRMA Commissioned in Navy

WASHINGTON, D. C.—Charles E. Wilson, president of the Air Conditioning and Refrigerating Machinery Association, has announced today that temporary leave of absence had been given William B. Henderson, executive vice president of ACRMA.

Mr. Henderson has been ordered to immediate active duty as a Lieutenant in the United States Naval Reserve. In World War I, Mr. Henderson served as pilot with the Royal Air Force.

During Mr. Henderson's absence, Miss Mary Jane Stewart, who has collaborated with him in Association operation for the past 10 years, and who is well known to industry members, will serve as ACRMA executive officer.

Industry Group Studying Parts, Service Setup

Munce, Schellenberg & McNeal to Report to WPB Committee

WASHINGTON, D. C.—The problems of maintaining commercial refrigeration and air conditioning machinery will be studied by a special subcommittee of the refrigeration and air conditioning industry advisory committee which was appointed at the advisory group's meeting in Washington last week. Sterling Smith, general industrial equipment division, was government presiding officer.

To attack maintenance problems, the most critical facing the industry today, this sub-committee was appointed to study the three chief aspects of keeping equipment in operation:

(1) Manufacture of parts.
(2) Distribution of parts.
(3) Manpower problems in installation of parts and repair of operating equipment.

The sub-committee has three members—Marshall G. Munce, York Ice Machinery Co., A. B. Schellenberg, Alco Valve Co., and Frank S. McNeal, Universal Cooler Co. The subcommittee will report to the industry advisory committee at the next meeting, Jan. 13, 1943.

Procedures for the industry under the new controlled materials plan were discussed, with particular reference to bills of material.

General Refrigeration Advisory Committee Is Announced by WPB

WASHINGTON, D. C.—The Division of Industry Advisory Committees of the WPB has announced the formation of a new "General Refrigeration and Air Conditioning" advisory committee.

Government president officer will be Sterling Smith of the Refrigeration Section of the General Industrial Equipment Branch of WPB.

Members are: Donald French, vice president, Carrier Corp.; C. V. Hill, Jr., vice president, C. V. Hill & Co.; J. B. Rainbault, manager, Air Conditioning & Commercial Refrigeration department, General Electric Co.; F. S. McNeal, president, Universal Cooler Corp.; M. G. Munce, assistant to the president, York Ice Machinery Corp.; Harry Newcomb, vice president, Servel, Inc.; W. D. Jordan, vice president, Liquid Carbonic Corp.; R. O. White, manager, Cooler Division, Day & Night Mfg. Co.; A. B. Schellenberg, president, Alco Valve Co.; E. R. Walker, Fedders Mfg. Co.

New Trades School In Illinois To Train Soldier 'Servicemen'

BLOOMINGTON, Ill. — Announcement is made of the founding of the Commercial Trades Institute organized for the purpose of training enlisted men of the United States Army in refrigeration maintenance and mechanics. The Institute's training center will be located at 407 W. Washington street, Bloomington, Ill. Executive offices are maintained at 221 N. LaSalle street, Chicago.

(Concluded on Page 10)

Save This Issue!

ANNUALLY up until this season AIR CONDITIONING & REFRIGERATION NEWS has published a Directory. All over the world buyers have kept this Directory handy as a source-of-supply reference book.

This season we were faced with a dilemma: A strong demand existed for a Directory, yet we knew it would be practically impossible to turn out an accurate source-of-supply reference book, inasmuch as so many firms in the industry are unable to fill even rated orders because of war work pressure.

If we arbitrarily denied free listing in product sections to old friends of whose ability to deliver we were uncertain, we'd lose those friends, or we might actually be unfair. Yet if we listed sources-of-supply which couldn't deliver, it would be a disservice to the Directory user.

So, it was decided to issue no Directory for this season. This decision was a costly one (for us) to make, because the Directory is a profitable publication. But it was the only honest, fair thing to do.

As a substitute for the Directory, NEWS advertisers who have something to sell were invited to use directory-type copy in their advertisements in this issue. It was a sort of "put up or shut up" proposition. Advertisers had to qualify themselves. Hence those in search of sources-of-supply information can get what they want by reading the advertisements in this issue. An index appears on Page 35.

This will not be so convenient for buyers as classified listings in the Directory. Nor will it provide a complete array of all producers, although it does come close. However, buyers can be assured that these advertisers are still in the industry and that they can fill rated orders. And after all, that's the most important buying information anyone can supply today.

So, preserve this issue. It will be useful for many months to come.

Frank Haag Heads Kold-Hold Sales

LANSING, Mich.—Frank A. Haag, formerly eastern manager of Kold-Hold Mfg. Co., has been appointed sales manager with headquarters in the main office at Lansing. He succeeds Paul H. Portteus, according to an announcement by James R. Tranter, president.

Commercial System Contracts Made Prior To Nov. 1 Held Taxable

WASHINGTON, D. C.—Where an installment or conditional sale contract for the purchase of commercial refrigeration equipment was made before Nov. 1, 1942, even though delivery might have been made later, all payments made on such contracts are taxable under the terms of the 1941 excise tax which imposed a 10% tax on commercial refrigeration equipment, according to a ruling received by AIR CONDITIONING & REFRIGERATION NEWS from the Treasury Department in Washington.

This ruling was made by D. S. Bliss, Deputy Commissioner of Internal Revenue, who made the statement as follows:

". . . if the making of an installment or conditional sale contract for the purchase of commercial type refrigerators occurred prior to Nov. 1, 1942, the date on which the tax on commercial type refrigerators was terminated, then all payments made on such contracts are taxable, regardless of the date of delivery or of payment."

The interpretation was given in response to a request put to Mr. Bliss by the NEWS on the question of whether bob-tail soda fountains

(Concluded on Page 2, Column 5)

Restrictions Removed On Utility Services For Ranges In Homes

WASHINGTON, D. C. — Restriction of utility lines to furnish gas or electric service to domestic ranges are relaxed in Supplementary Preference Rating Order P-46-b as amended Dec. 16 by the Director General for Operations.

Previously if the owner of a gas range moved into a house wired for an electric range, or if the owner of an electric range moved into a house piped for gas, it was necessary for the owner to acquire the type of range that would operate on the service already brought to the house.

This was changed today to permit a utility to bring gas or electric service to the house to serve either a gas or electric range, provided the dwelling is not already equipped with a range of any kind. This is allowed, however, only when a person moving from one house to another already owns a range which he is taking with him.

Provision also is made for gas or electric service even where the applicant had not used a range previously, if the dwelling is not equipped with a range of any kind and if complete facilities for service to a gas or electric range have not previously been installed.

In either case, there is a limit on the amount of critical material which may be used. In the case of an electric range, not more than 15 pounds of copper may be used; in the case of a gas range, the connection may not require more than 75 feet of 1¼-inch steel pipe or its equivalent in other sizes of pipe.

Text of the order says:

Part 978—Utilities: Maintenance—Repair and Supplies.

(Supplementary Preference Rating Order P-46-b, as Amended Dec. 16, 1942.)

Supplementary Preference Rating Or-

(Concluded on Page 2, Column 4)

Prices of Parts Must Conform To OPA Ceiling

Change In Regulation 165 Voids Old Practice of Charging March Top

WASHINGTON, D. C.—The services regulation was amended Dec. 13 by the Office of Price Administration to make the maximum price charged for any commodity when sold in connection with a service the same as the maximum price fixed by a specific regulation for the same commodity when sold by itself.

OPA said the amendment will tend to standardize prices consumers must pay for services on repair parts.

Thus a garage man who sells a farm tractor gasket is now allowed to charge no more for the gasket itself, when he installs it, than he would if he sold the gasket over the counter. Of course when he installs the gasket, he may still charge the tractor owner the same additional fee for the service itself that he charged in March, 1942.

Formerly, under the services regulation, the seller was allowed to make the same charge for any service, which included a part, that he made during March, 1942, regardless of the maximum price set by any other regulation for any replacement part or other commodity sold in connection with the service.

Under today's amendment (No. 12 to Maximum Price Regulation No. 165, effective Dec. 18) the service seller must adjust his prices downward when the ceiling prices of the commodities he sells in connection with the service are specifically established at lower than the March, 1942 levels by other maximum price regulations governing them. Con-

(Concluded on Page 28, Column 4)

Travers Will Direct Crosley Advertising

CINCINNATI—Ellis Travers has been appointed director of advertising and public relations for the manufacturing division of the Crosley Corp., it was announced last week by R. C. Cosgrove, vice president.

For the past nine years Mr. Travers has been vice president of Ruthrauff & Ryan in New York and in Detroit, where he was in charge of that agency's office.

Prior to his advertising agency experience, Mr. Travers was director of advertising and assistant sales manager of Nash Motors. He was with Nash for 15 years.

Mr. Travers started his new duties at Crosley Dec. 7, and will be in charge of advertising, promotion and public relations activities.

Master Locker Systems Alters Company Name

SIOUX CITY, Iowa — Announcement has just been made that the corporate name of the Master Refrigerated Locker Systems, Inc., manufacturer of the "Master Food Conservator" locker, has been changed to Master Manufacturing Corp.

This change affects only the corporate name and does not entail any change in manufacturing policy or in the personnel of the company.

This Is a 'Directory' Issue -- Save For Future Reference

Minneapolis-Honeywell Obtains $15-Million 'V' Loan For War Work

MINNEAPOLIS — Minneapolis-Honeywell Regulator Co. has announced the negotiation of a $15,000,000 Regulation V loan for the purpose of financing the company's large war production program.

The credit will be available to the company at any time and from time to time until Dec. 31, 1945, at 2¾% interest on the amount borrowed.

In a letter to stockholders H. W. Sweatt, president, said: "This credit provides funds with which to carry the company's investment in war production contracts. It also protects the company at the time of termination of contracts through a provision that maturity is suspended and interest waived on the portion of the loan represented by terminated contracts until final settlement of the contracts has been reached.

Crosley Executive

ELLIS TRAVERS
New director of advertising for the Crosley Corp.

Further Restrictions Placed on Civilian Use of Zinc Supply

(Official WPB Release)

WASHINGTON, D. C.—The zinc conservation order, M-11-b, has recently been amended to further restrict the use of that metal in less essential civilian uses. The amendment also clarifies the language of the order to make it clear that protective coating (other than paint) and galvanizing are included in the restrictions.

The order as amended prohibits the use of zinc in mechanical refrigerators, except for essential food storage, food transportation, and industrial use, but does not restrict its use in repair and maintenance parts. Among the more than 100 things listed in which zinc cannot be used are ranges, vacuum cleaners, washing machines, radios, phonographs, except for repair and maintenance parts for these items.

Restrictions Relaxed On Electricity, Gas For Domestic Ranges

(Concluded from Page 1, Column 4)

der P-46-b is hereby amended to read as follows:

‡ 978.3 **Supplementary Preference Rating Order P-46-b.** Notwithstanding the provisions of paragraph (f) (3) (ii) of Preference Rating Order P-46, as amended, gas and electric service connections may be made by producers to permit the operation of a gas or electric range in the dwelling of a domestic consumer, provided that the conditions stated in either paragraph (a) or paragraph (b) hereof, and the conditions stated in paragraph (c) hereof, are satisfied:

(a) In the case of an application for an extension to serve a gas or electric range which the applicant has used in a dwelling which he previously occupied, the dwelling proposed for connection is not equipped with a range of any kind;

(b) In case of an application for an extension to serve a gas or electric range which the applicant has not used in a dwelling which he previously occupied.

(i) The dwelling proposed for connection is not equipped with a range of any kind, and

(ii) Complete facilities to range location are not installed for servicing either a gas range or an electric range; and

(c) Connections (including any additional service drop, primary, secondary, and ground conductor, but excluding service entrance conductor and interior wiring) can be made with an expenditure by the producer of not more than the following amounts of material:

(i) In the case of an electric range, 15 pounds of copper in conductor, or

(ii) In the case of a gas range, 75 feet of one and one-quarter inch steel pipe, or any length of steel pipe weighing in the aggregate not more than 170 pounds.

Ruling Is Made on Taxable Contracts In Commercial Sales

(Concluded from Page 1, Column 3)

and ice cream chests were exempt from the provisions of the Revenue Act of 1942, the wording of which would seem to exempt all commercial refrigeration equipment. In his answer Mr. Bliss stated:

"It appears that the manufacturer in question has sold to the dealer certain soda fountains and ice cream chests. The manufacturer has stated that the tax attaches to such sales even though the sales were made after Nov. 1, 1942, the effective date of the Revenue Act of 1942. The dealer in question has protested the charge made for tax on such sale.

"It is held that no tax would attach to the sale of the above-mentioned articles by the manufacturer provided such sale was made on a straight cash or open credit account basis.

"It is the understanding of this office that in a number of cases contracts for the sale of articles of the type mentioned above have been entered into prior to Nov. 1, 1942 with payments to be made on an installment basis with title reserved. In certain cases, delivery and partial payments occurred prior to this date and in other cases, contracts were made prior to Nov. 1, 1942 where delivery to the purchaser had not been made on that date.

"Section 3405 of the Internal Revenue Code, as amended, imposes a tax on sales of refrigerators and, standing alone, the tax thus imposed would apply to all sales whether made on an outright cash or credit basis, or under conditional sales agreements with title reserved, or under installment sales agreements which purport to be leases. However, section 3441 (c) of the Code, as originally enacted, dealing specifically with leases, installment sales contracts with title reserved and conditional sales, makes an exception in that the tax is not incurred by the making of a sale, but instead by the making of a contract of the type described. The time the tax becomes due is also changed, so that instead of being due in the month succeeding that in which title passes, it is due on each payment in the month succeeding the month in which paid.

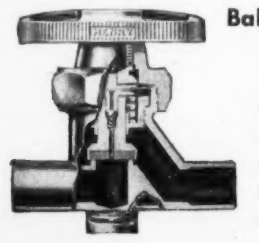
"It follows that if a contract of the special types enumerated is made during the period in which the tax is applicable to such transactions, the tax attaches to all payments thereunder, even though before the delivery of the article or the completion of the payments the law imposing the tax may have been repealed as to subsequent transactions.

"Section 549 of the Revenue Act of 1941 amended section 3441 (c) of the Code to give special consideration to certain types of transactions initiated before July 1, 1940 or Oct. 1, 1941. Section 3441 (c) (3), as amended, is of special significance, for it provides for tax exemption on these types of contracts only in the event delivery of the article, as well as the making of the agreement, occurred before Oct. 1, 1941. This caused the tax to accrue on many contracts which would have been exempted if the previous general test of the date of making the contract had been used.

"Since the Revenue Act of 1942 does not contain similar special legislation making delivery before Nov. 1, 1942, an additional text of taxability, the matter reverts to the general provisions of section 3441 (c) (1), as amended. Accordingly, if the making of an installment or conditional sale contract for the purchase of commercial type refrigerators occurred prior to Nov. 1, 1942, the date on which the tax on commercial type refrigerators was terminated, then all payments made on such contracts are taxable, regardless of the date of delivery or of payment."

APPROVED FOR NAVY, MARITIME COMMISSION AND ARMY USE

VALVES



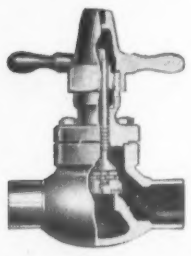
Balanced-Action Diaphragm Packless Valve
TYPE 626

Regardless of operating conditions or differential in pressure above and below valve seat, balanced-action assures positive and instantaneous opening. Balancing action is really equalizing of pressures on two sides of valve seat at instant of opening. This is accomplished by channel in axis of valve stem. When valve is closed, upper port of channel is sealed by diaphragm assembly itself. At instant of opening, pressure above seat forces diaphragm assembly upward, exposing upper port of balancing channel. Pressure released through channel to region below seat, equalizes pressures, assuring positive opening. Spring-tensioned ball check seals channel for diaphragm inspection.

These valves may be used with any refrigerant except ammonia, and with any other fluids not corrosive to brass. Their design lengthens diaphragm life by permitting use of lighter spring. Diaphragm life is increased in other ways as well. Non-rotating bearing plate in operating stem protects diaphragm from rotating friction of stem. A multi-ply structure-and-fracture-proof diaphragm, designed to resist wear and corrosion, is used. Available in flare and solder connections.

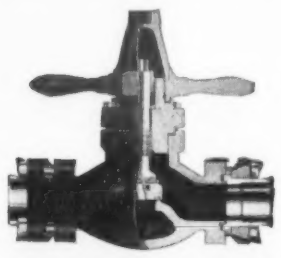
Oval Handwheel provides natural grip

Ports-In-Line eliminates excessive tube bending, making neater, easier, quicker and cheaper installations.



Wing-Cap Valve
TYPE 203

Designed especially for Freon and Methyl Chloride. Have patented rotating self-aligning stem disc. Special resilient packing. May be repacked under pressure. Wing cap can be inverted and socket used for operating valve. Made of non-ferrous alloy to meet government specifications. Solder connections machined directly in valve body.



Semi-Steel Flanged Globe Valve
TYPE 223

Has companion flanges with solder sleeves, bolts, and gaskets. Internal construction is similar to Type 203 shown above.

Snap Action Diaphragm Relief Valve
TYPE 541

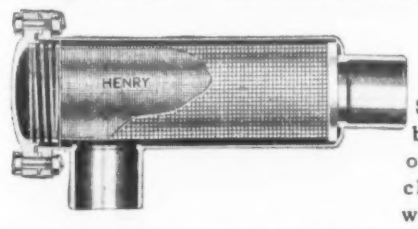
Instantaneous pressure relief, fast, positive reseating action and very small differential between opening and closing pressures. Relief point settings from 90 lbs. to 300 lbs. per square inch.

HENRY VALVE CO

HENRY VALVE COMPANY
1001-19 N. SPAULDING AVENUE • CHICAGO, ILLINOIS

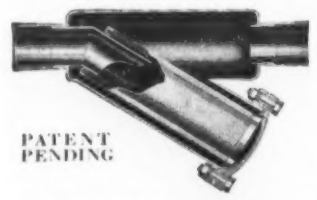
STRAINERS

Angle Strainer with Solder Connections



TYPE 886

Screen can be taken out for cleaning without removing strainer from line. Will not trap oil.



"Y" Strainer
TYPE 895

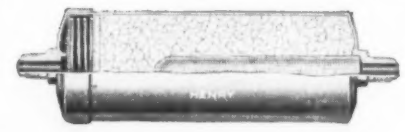
With FPT or solder type fittings. Exceptional design. Welded steel construction. Negligible pressure drop. Screen can be taken out for cleaning without removing strainer from line. Very large screen area. Light weight. Baffle prevents heavy particles from injuring screen.

DRYERS

Abso-Dry Pressure Sealed Dryers

Exclusive Henry vacuum process first removes every trace of moisture, then the dryer is charged with dehydrated air. Loosening seal cap produces hissing sound, a guarantee of original factory dryness.

Soldered Shell Dehydrator



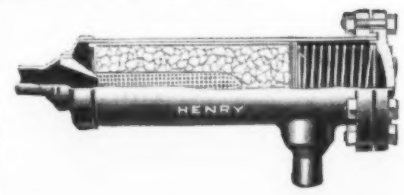
TYPE 712

Equipped with dispersion tube.

Dehydrator with Side Outlet

TYPE 756

Cartridge type flanged shell dehydrator. Design permits removal and replacement of cartridge without loosening end connections.

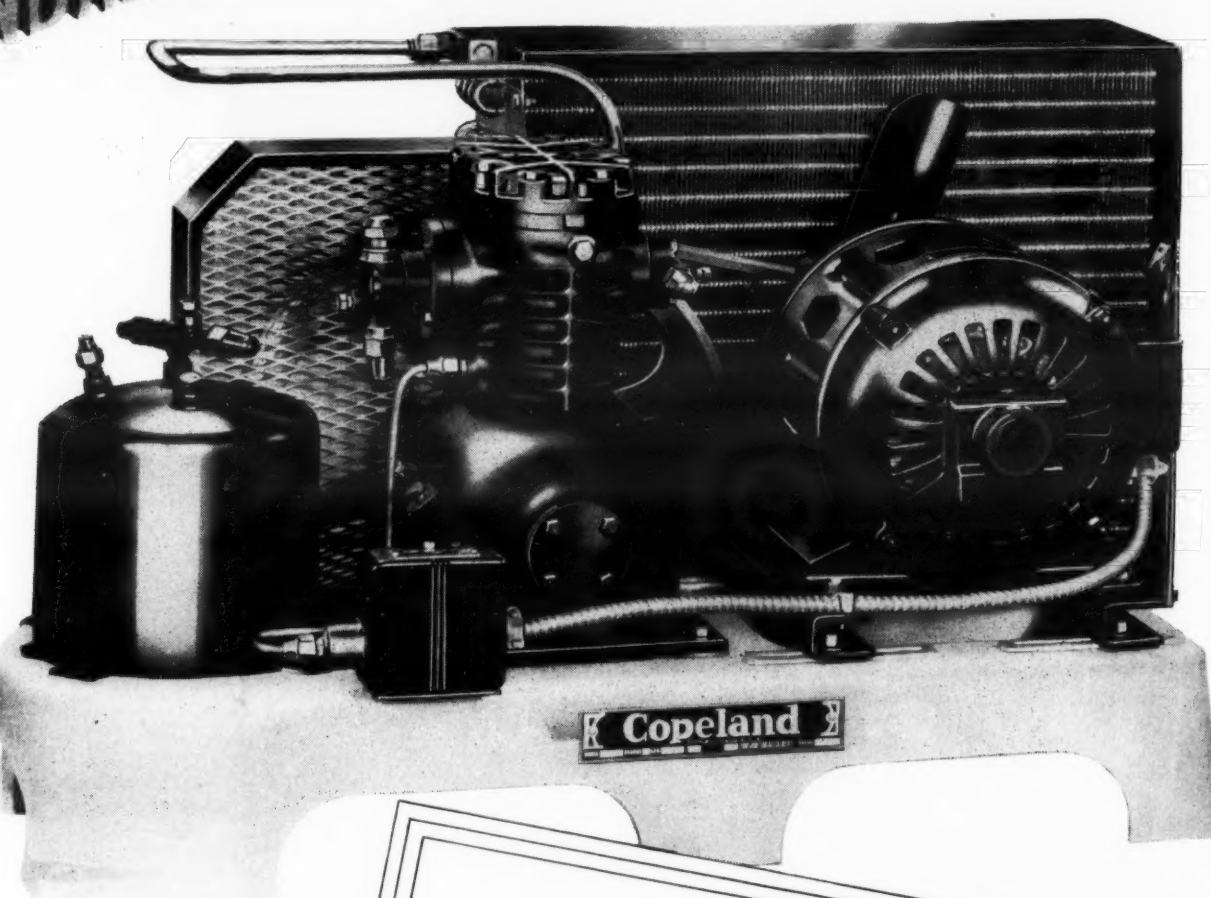


ALSO AMMONIA VALVES AND FORGED STEEL FITTINGS

Serving Essential Needs

Copeland

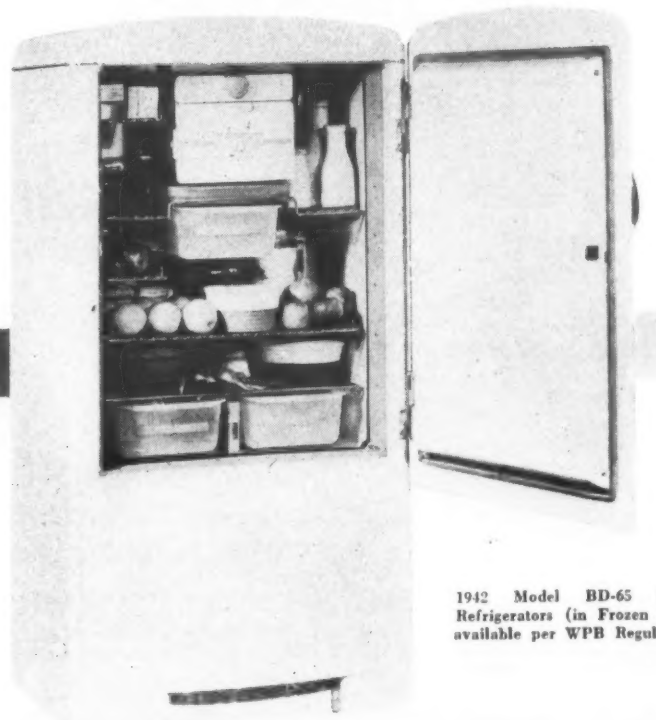
DEPENDABLE Electric REFRIGERATION



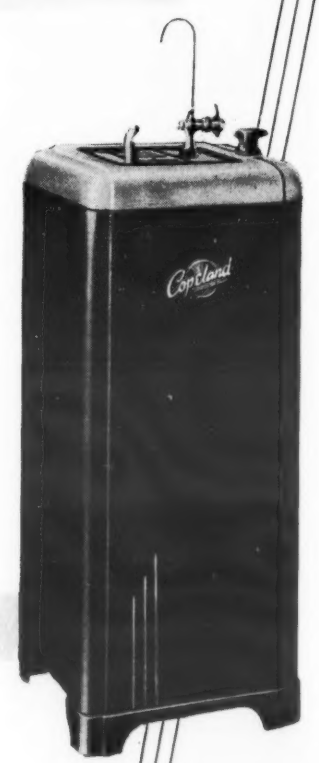
Copeland Wartime Production Backed By 25 Years Of Precision Manufacturing

Copeland Commercial Units, Water Coolers and Refrigerators serve broad vital requirements—from highly specialized applications for our armed forces all over the world to simple, but also war-winning, food preservation on the home front. Outstanding value and unexcelled performance, for which Copeland has long been famous, have earned this wide acceptance—a tribute to the skill and loyal effort of Copeland employees.

Supplementing essential refrigeration activity, Copeland is making parts for bomber carburetors, anti-aircraft guns, airplanes and tanks—work of an extremely precise nature. The volume of such assignments, starting before the war, has necessitated doubling plant capacity. And, in line with the critical material conservation program, Copeland continues to furnish service parts for Commercial Units, Refrigerators, and Water Coolers. Thus, uninterrupted operation of hundreds of thousands of machines on important duty in the field is assured with minimum expenditure of material.



1942 Model BD-65 Deluxe Refrigerators (in Frozen Stock) available per WPB Regulations.



Copeland Dependability On Ships

Thousands of Copeland Refrigerators and Water Coolers are serving the war effort on Navy, Maritime Commission, and other vessels. Copeland's entry in this field in 1937, even before the "defense era," afforded invaluable experience for the enormous war ship-building program. Refrigeration equipment for ships is special in many details, is built to strict specifications, and must pass rigid structural and capacity tests under high temperature conditions. That Copeland fulfills all demands, is evidenced by the big volume of orders already delivered, unfilled, and currently being placed.

Copeland Refrigeration Corporation, Sidney, Ohio

New York Office, 250 East 43rd. Street International Division, 60 Wall Tower, New York, N. Y., U. S. A.

The Priorities Quiz

(Air Conditioning & Refrigeration News, with the aid of a man who is actually engaged in handling much priorities work, will attempt to answer questions from readers about priorities problems. The editors will not guarantee to answer all questions, nor can they guarantee that the answers will be legally perfect, but an effort will be made to provide a guide to correct procedure wherever possible.)

How to Get a High Rating In Emergency Situations

Q. The highest rating available under P-126 is A-1-a which, as you know, is away down the scale now that there are "AA" ratings from AA-1 to AA-5. Thus, the A-1-a available under P-126 for emergency servicing of an actual breakdown as defined in P-126, doesn't really help. Can you suggest a way to get a high rating quickly for material to repair a breakdown without the long wait usually involved in filing a PD-1a application?

A. The WPB has set up an emergency procedure for just such a case as you suggest. If, in the event of a breakdown or other emergency you require a small quantity of critical raw material and you are unable to obtain this material with existing ratings under P-126, you may make application for emergency assistance either by telephone, telegram, or a personal interview at your local WPB. It is suggested, however, that you secure a copy of form PD-33a to have on hand in the event of such an emergency. This form shows all the data which the local office requires in order to handle your emergency case.

When you have explained to your local WPB the material you require, the equipment to be repaired, its use, the name of your supplier, what rating will be required to secure the material together with a concise statement of the emergency situation, your local board will take immediate action and can and will assign you a preference rating sufficient to secure the material required.

End Use Patterns Still Desirable - - If Done Right

Q. Our suppliers of brass and copper products have been insisting that we continue to furnish and use information in spite of the fact that Priority Regulation No. 10 which sets up the Allocation Classification System was revoked. We understand this is due to instructions issued by the Copper Branch of the WPB.

Do you know if under these Copper Branch instructions we are still permitted to develop an end use pattern as we did under Regulation No. 10 and show this pattern on our purchase orders?

A. Yes, it is still permissible to compile an over-all end use pattern as you did previously with the single exception that, whereas, previously where any one allocation sub-class was less than 5% of your total dollar volume you could formerly prorate the total of these sub-classes of less than 5% over all the remaining classes, now you must show each class by itself regardless of the percentage.

If a sub-class is less than 5%, it must now be combined with other sub-classes within the same allocation classification and this combined total must show on your pattern even though the total percentage is less than 5%.

The Copper Branch offers this as an example:

". . . Classification 5.10, Ammunition, 20 mm. and above, 3%; Classification 5.20, Ammunition, small arms below 20 mm., 4%. Since both 5.10 and 5.20 are sub-classes of the Class 5.00, the two should be combined under the main class and reported as: 5.00, 7%.

"Include in the main allocation classes (e.g. 2.00, 5.00, 10.00, etc.) only those items which cannot be properly identified with any of the sub-classes within the respective main classes."

If CMP Doesn't Request Your Data, Don't Worry

Q. The CMP time table published by WPB says that second quarter requirements for copper, steel and aluminum—the three controlled materials—are to be submitted to the Requirements Committee on Jan. 1. Here we are well into the month of December and as yet, no one has asked us to submit any figures on what we will need in our manufacturing operations for the second quarter on these items. I have tried to get information from the WPB but they have nothing to say except to wait until someone approaches us. Do you have any information that would indicate what is actually being done to assure the small manufacturer of receiving his second quarter requirements of controlled material?

A. Harold Boeschenstein, Director of the CMP for the WPB, has answered your questions very nicely in a statement, which he recently issued, and in which he said:

"Through PRP applications and from other sources, we have on hand data on which it is possible to base sound estimates for many items. Detailed Bills of Materials will be asked for at this time only when they are absolutely essential to the program. Hence those manufacturers who do not hear from their WPB Industry Branch should not fear that they are being overlooked, but rather will understand that no additional information is required of them at this time.

"No prime contractor should submit a Bill of Material unless specifically requested to do so by his source of allotment—"

Procedure For Sale of Idle Copper, Steel Stocks

Q. A recent amendment to Priorities Regulation No. 13 which covers idle stocks of copper and steel says that all sales must be reported to the Copper Recovery Corp. or the Steel Recovery Corp. Does not this mean that we can sell no idle stocks reported to these two branches of the WPB without specific authority from them?

A. No. You may still make sales of these idle materials under the authority of Priorities Regulation No. 13 and in accordance with schedule "A." However, when you have made a sale of materials previously reported as idle stock, you must now in each case, make a report of the sale by sending a copy of your invoice to either the Copper Recovery Corp. at 200 Madison Avenue, New York, or the Steel Recovery Corp., 5835 Baum Boulevard, Pittsburgh. The authority for the sale is granted you under Priorities Regulation No. 13 and you need no other authority provided you comply strictly with the terms of the regulation which are self-explanatory.

Cylinder Returns Termed Vital Need By Chairman Nelson

WASHINGTON, D. C.—Manufacturers and distributors of compressed gases were praised by Donald M. Nelson, chairman of the War Production Board for their efforts to conserve steel cylinders used for compressed gases.

The WPB Director congratulated them on the initiative taken in securing more rapid cylinder turnover. He commented particularly on the requirement that empties be returned when full cylinders are supplied, and the time restrictions placed on customers holding cylinders.

The shortage is so serious that perhaps no additional cylinders will be released to the industry during 1943, because of the increasing demands of the military forces for shipment of cylinders outside the country. Besides refrigerant bases, the cylinders are used for various gases used in steel production, shipbuilding, fabrication of tanks, guns, shells, planes, and other elements of modern warfare, including breathing oxygen for high altitude flying.

'Don't Worry' WPB Tells Producers on CMP Deadlines

WASHINGTON, D. C.—Harold Boeschenstein, Director of the WPB Controlled Materials Plan Division, declared Dec. 6 that manufacturers who will operate under CMP have no cause for uneasiness on the amount of paper work to be required of them before allotments of material for the second quarter of 1943 are made.

"While the CMP 'time-table' calls for submission by the seven Claimant Agencies on Jan. 1 of their second quarter requirements for controlled materials, it is not planned in the meantime to burden industry with impossible demands for information," Mr. Boeschenstein said.

"Through PRP applications and from other sources we have on hand data on which it is possible to base sound estimates for many items" the CMP director went on. "Detailed bills of material will be asked for at this time only when they are absolutely essential to the program. We believe these can be prepared with a minimum of disturbance to industry. Hence, those manufacturers who do not hear from their Claimant Agency or WPB Industry Division should not fear that they are being overlooked, but rather will understand that no additional information is required of them at this time.

"No prime contractor should submit a bill of materials unless specifically requested to do so by his source of allotment — that is, a Claimant Agency, the appropriate WPB Industry Division or another contractor.

"We are on schedule here in Washington, and I cannot emphasize too strongly the fact that we are planning no demands upon industry that might throw it or ourselves off the time-table," Mr. Boeschenstein concluded.

40,000 More Cleaners Released by WPB

WASHINGTON, D. C.—Release of an additional 40,000 domestic vacuum cleaners frozen in the hands of manufacturers and private brand sellers since Oct. 24 was announced Dec. 5 by the Consumers' Durable Goods Division of the WPB.

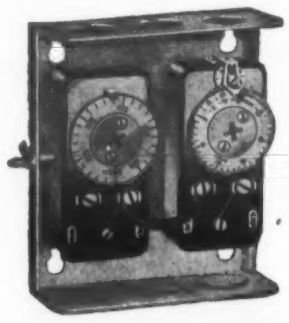
The cleaners, which now become available for sale to the general public, are in addition to those released from stocks of retailers and wholesale distributors on Nov. 21. They were unfrozen through favorable action on a number of appeals from provisions of Order L-18-c, which imposed the original sales and delivery restrictions. Both tank and brush type electric cleaners are included in the order.

Approximately 145,000 domestic vacuum cleaners still remain frozen as a reserve for requirements of the Army, Navy and other government agencies.

ON LAND — ON SEA!

On land and sea — through heat and cold — our Army and Navy are doing a splendid job for all of us. Their progress is due, first, to an unconquerable will to fight and win — second, to the ability of American Industry to follow through in the production of supplies as well as the equipment necessary to transport and protect those supplies in any climate, in any kind of weather.

The Army and Navy rightfully have first call upon your service and ours — and in this time of emergency our ability to serve is being aided to a great extent by the cooperation and understanding evident within the refrigeration industry—the same cooperation and understanding that will lead to early victory and resumption of normal business.



HYDRAULIC ACTION CONTROL

WHITE-RODGERS ELECTRIC CO.

1211m CASS AVENUE • ST. LOUIS, MISSOURI

CONTROLS FOR HEATING ★ REFRIGERATION ★ AIR-CONDITIONING ★ ★

CORDLEY Electric WATER COOLERS

ALL SIZES FOR SHIPBOARD AND LAND USE MEET GOVT. SPECS.

CORDLEY & HAYES, NEW YORK, N. Y.

SERVING THE WEST COAST

GOVERNMENT—WAR INDUSTRIES

CIVILIAN CUSTOMERS

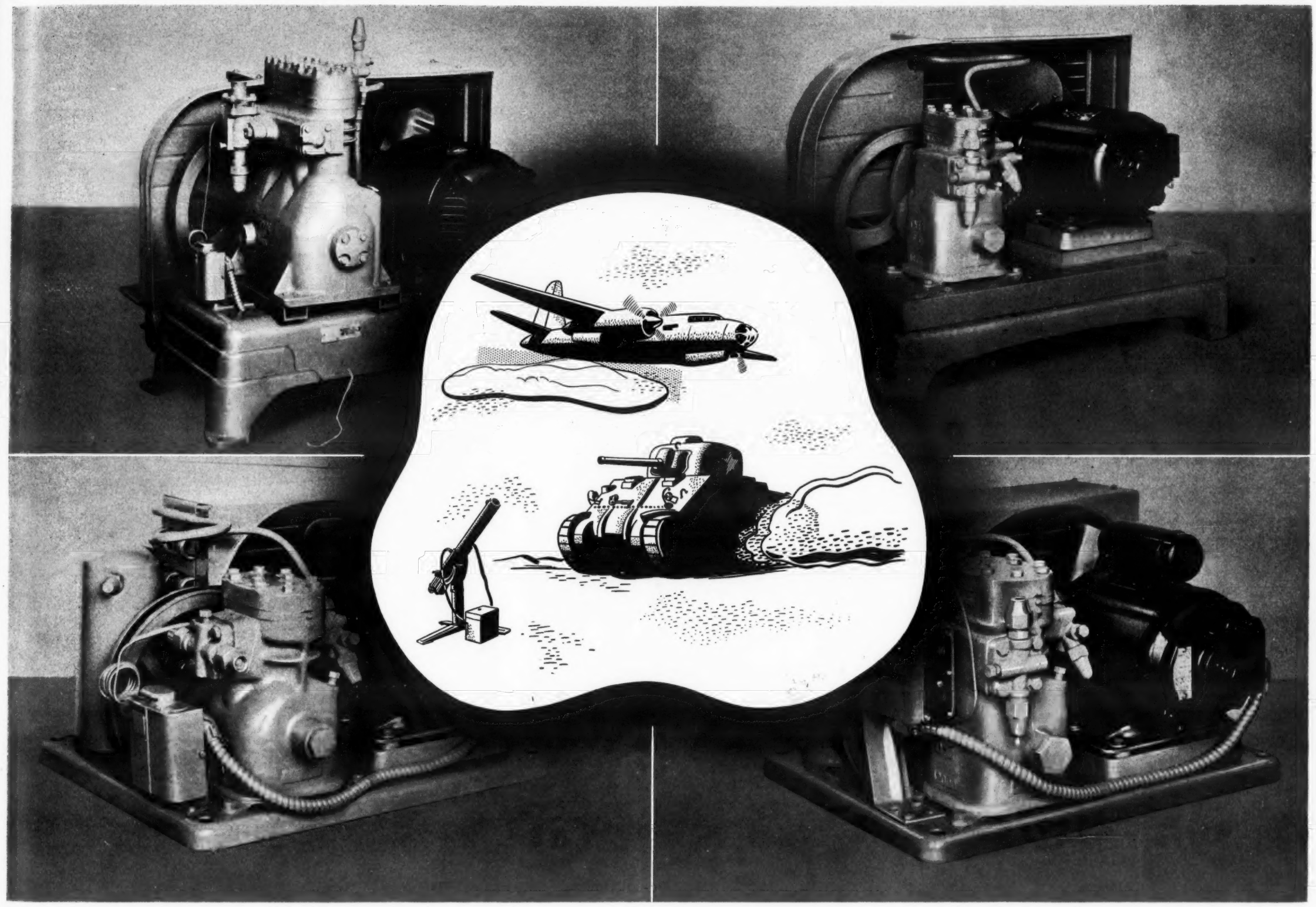
REFRIGERATION SUPPLIES-TOOLS-ACCESSORIES

A REQUEST ON YOUR LETTERHEAD WILL BRING OUR LATEST SUPPLY CATALOG

REFRIGERATION SERVICE INC.

3109 BEVERLY BLVD., LOS ANGELES, CALIF.

This is the Situation... **Production of refrigerating units for manufacturers supplying all branches of the Armed Services and war industry . . . Production of war equipment for manufacturers of tanks, planes and guns . . . Expansion of research-engineering facilities for manufacturers formulating long range plans which involve dependable, automatic refrigerating units.**



Now in Production:

Refrigerating units in a wide range of capacities for manufacturers supplying the Army, Navy, Marines, Air Corps and war industry . . . water chests and pumps for cooling machine guns . . . hydraulic mechanisms for aiming turret guns on tanks . . . lubricating pumps for bombers . . . all produced on the newest type of equipment developed and installed to make possible record-breaking delivery of these tools of war.

After Victory:

Again a complete line of remote and self-contained type refrigerating units incorporating the experience, equipment and engineering required and acquired in meeting wartime performance and production demands. As during the past 20 years devoted exclusively to the design and manufacture of refrigerating units, our goal will continue to be—more worthwhile features than any single competitive product.

A Long-Established Sales Policy

Universal Cooler's established policy is to sell only to manufacturers. Thus we never are in competition with the manufacturers we serve, or their jobbers. Since 1922, Universal Cooler's one job has been to supply leading manufacturers of refrigeration equipment with refrigerating units for such finished products as ice cream cabinets, water coolers, food storage refrigerators and display cases, frozen food cabinets and air-conditioning systems. Until Victory, our production will be devoted 100% to supplying war industry. When Victory is won, our sole aim will be better-than-ever automatic refrigerating units for manufacturers of refrigeration equipment.

Expanded Research-Engineering Facilities:

One entire building now is devoted to research-engineering. The largest, finest corps of Universal Cooler engineers is on the job to expedite our war effort—to plan ahead for new, improved refrigerating units. Combined with a background of steadily-increasing leadership in the refrigeration business, these facilities form a valuable "pool" of refrigeration experience. This "pool" is available to you. Our engineers will be glad to discuss your long range plans, and to collaborate in solving any problems involving dependable, automatic refrigerating units. You are invited to take advantage of these research-engineering facilities.

SAVE SIMPLIFY SUBSTITUTE
REFRIGERATION AND AIR CONDITIONING CONSERVATION

UNIVERSAL COOLER

WE SELL TO MANUFACTURERS ONLY

UNIVERSAL COOLER CORPORATION • Automatic Refrigeration since 1922
MARION, OHIO • BRANTFORD, ONTARIO

THROW YOUR SCRAP INTO THE FIGHT!

Refrigeration and Air Conditioning As a War Production Tool

By L. W. Clifford, Sales Development Section Supervisor, Westinghouse Electric & Mfg. Co., East Springfield, Mass.

4. Control Tower Cooling At Air Fields and Bases

At all Air Fields, one of the principal nerve centers of Field Operations is the Radio Control Tower. This is a large room, completely enclosed in glass from a height of 48 inches above the Tower room floor to allow clear visibility in all directions. Usually this tower is above one of the hangar buildings or else is supported on a structural framework at a height of about 50 feet above the ground.

From this tower all plane traffic is controlled by means of radio communication.

Permission to take off and land must be obtained from the Tower officer, as well as instructions as to runway to use for planes leaving or arriving. In bad weather the Tower officer renders invaluable assistance to pilots having difficulty in locating the field and in landing.

Constantly on the alert the Tower officer is in position to avert many bad accidents by his advice to student "soloists" when a "pancake" landing or an overshooting of the field seems to be shaping up.

Completely unprotected from the sun and with walls glassed in, the Control Towers develop very high internal temperatures, especially in the South. Regulations require that the door be kept locked at all times and the expensive and sensitive instruments and equipment make it impractical to use opened windows for ventilation.

As a result, air conditioning again provides the answer to the problems of making possible the continued efficiency of the human equation and consistent and reliable operation of the instruments and equipment in the Control Tower.

Alabama Freezing Plant Has Immersion System

BIRMINGHAM, Ala. — Dixie Frosted Foods here is going ahead with plans to build a $50,000 quick freeze plant at Georgiana, Ala. to pack strawberries, peas, lima beans, and peaches, and to experimentally box green turnips.

Priorities have been obtained for necessary equipment, which will include pre-cooling rooms. The plant will use the TVA process of immersion freezing and the Baker Ice Machine Co.'s system of cold pack in 30 pound cans.

Non-Ferrous Metal Branch Set Up

WASHINGTON, D. C.—Formation of a Non-Ferrous Metals Branch here through consolidation of two other OPA price divisions is announced by J. K. Galbraith, deputy administrator for the Office of Price Administration.

The new branch is composed of the former Zinc, Lead and Tin branch, which was headed by John N. Sumner, and the Copper, Aluminum and Ferro-Alloys branch, until the merge headed by Carl G. Holmquist.

Mr. Sumner will be in charge of the Non-Ferrous Metals division.

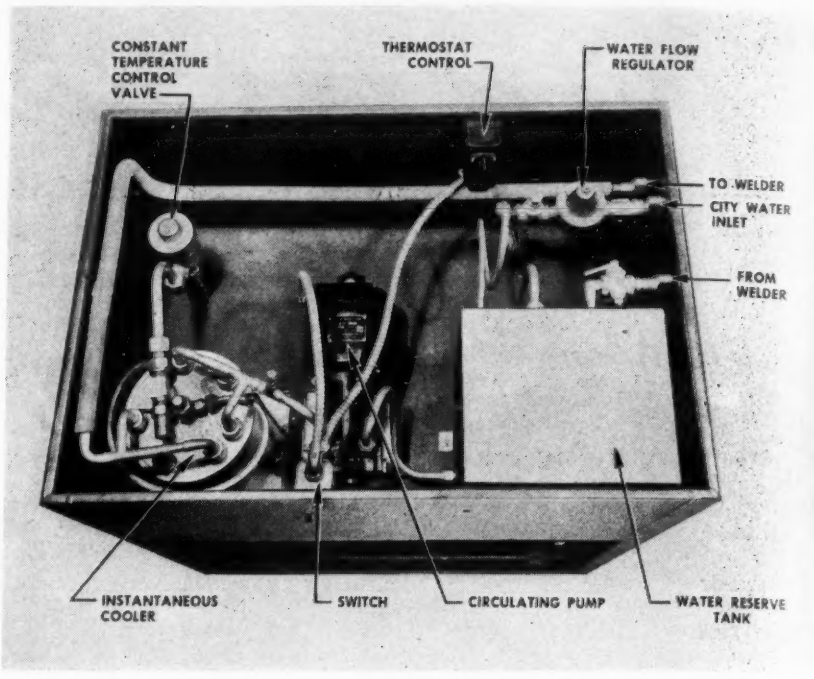
Five operating sections have been set up for the recently established branch. They are: Basic Metals and Mining—O. C. Lockhard, head; Ferro-Alloys—Donald Van Deusen, head; Minerals and Minor Metals—Philip Woolfson, head; Scrap and Secondary Metals—Thomas McManus, head; and Fabricated and Manufactured Products—Orrin McCorison, head.

The chief of the new division, Mr. Sumner, is on leave from the University of Buffalo where he is professor of economics. For more than a year he had been in charge of the ex-Zinc, Lead and Tin branch.

New Fresno Firm Formed

FRESNO, Calif.—Fresno Sales Co., refrigeration and dairy equipment, is the firm name under which Alba Wimer and Samuel Alexander have obtained a certificate to conduct business at 1250 Van Ness Ave., Fresno.

'Insides' of a Spot Welder Cooler



* * *

New Spot Welder Cooler Employs Use Of an Instantaneous Water Cooler

DETROIT — A new spot welder cooler which produces three important advantages for the spot welding operation, has recently been introduced by Temprite Products Corp. here.

The three special advantages claimed for the Temprite model 580-WC spot welder cooler are:

1. Longer life of welding tips with consequent reduction in refinishing jobs.
2. Consistent uniformity of weld due to constant tip temperature.
3. Increased production per welder.

Temprite engineers state that "while model 580-WC results in improved operation of all types of spot welders on all metals, it is of particular importance on aluminum spot welders where the peculiar structure of the metal requires that the welder tips be maintained at a constant controlled low temperature at all times. Research has established that 40° is the ideal coolant temperature for satisfactory operation on production welding and the Temprite system will deliver water at this temperature direct to the welding tips at a constant rate within its listed capacity."

Model 580-WC is a special self-contained cooling unit designed to supply a constant flow of low temperature water to electric spot welder tips and transformers. The unit operates as a water circulating system and can be used to operate one, two, or three separate spot welders depending on the maximum heat load of the welders and the resistance to flow through the welder water circuit.

It is equipped with the proper size Temprite instantaneous water cooler and all accessories including the Temprite constant temperature control valve, a 1-hp. condensing unit, and a ½-hp. water circulating pump.

The system is capable of circulating 120 gallons of water per hour against a spot welder drop of 100 pounds gauge. Pump is equipped with an adjustable by-pass valve so that the rate of water flow through the spot welder assembly can be controlled.

Cabinet is constructed of heavy gauge furniture steel, rust proofed and finished in olive green Krinilan lacquer.

Specifications of this spot welder cooler are as follows:

Cabinet Dimensions: Height, 42¾ inches; width, 34½ inches; depth, 23 inches. Shipping weight, 550 pounds.

Maximum Capacity (gallons per hour): 152 gph, 7½° rise (temperature rise of cooling liquid flowing through welder); 120 gph, 10° rise; 100 gph, 12½° rise; 86 gph, 15° rise.

Number and Capacity of Spot Welders Handled by One Model 580-WC. (welder rating KVA): 3—20-KVA welders; 2—30KVA welders; 2—40KVA welders; 1—50KVA welder; 1—60KVA welder.

'Combine Conditioning & Sterilization' Says Doctor

PITTSBURGH—"Ideal method of air sterilization may prove to be the combination of mechanical air conditioning and air filtration either with ultra-violet light or with one of the effective aerosols such as Propylene Glycol," reported Dr. Simon S. Leopold, University of Pennsylvania, at the recent meeting at Mellon Institute here of the Industrial Hygiene Foundation.

"Best method," Dr. Leopold pointed out, "will depend upon the size and other physical features of the particular space to be sterilized.

"Methods of air sterilization to be as effective as possible," Dr. Leopold declared, "must be based on the knowledge of how bacterial and virus air-borne infections are conveyed.

"Ultra-violet light is very effective against the bacteria and viruses present in sprays from coughing and sneezing and is an almost ideal method of air sterilization," said Dr. Leopold.

"Only reservations are the ultra-violet light is probably much less effective against the organisms in dust, plus costs at present."

COMMERCIAL AND INDUSTRIAL
Refrigeration CONTROL
FOR EVERY NEED

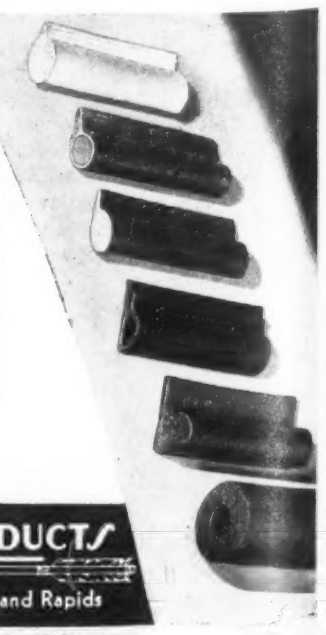
MINNEAPOLIS-HONEYWELL offers a complete line of commercial and industrial refrigeration and air conditioning controls to meet all temperature or pressure requirements. The versatility of Polartron gives it universal application. With its standard plus features and accessories, Polartron can be quickly adapted to any and all control requirements. Polartron is extremely simple and easy to install, and has only one moving lever. Polartron will often save 20 to 40 per cent in power and will greatly conserve food by eliminating deterioration and spoilage. M-H Polartrons, and associated controls, are all available on proper priority. Minneapolis-Honeywell Regulator Company, 2807 Fourth Avenue South., Minneapolis, Minnesota. . . . Branches in 40 other cities.

MINNEAPOLIS-HONEYWELL
CONTROL Systems

JARROW
DOOR GASKETS
Preferred by Manufacturers, Jobbers, Service Men

WHY? Because refrigerator door gaskets are a specialty—not a side line—with Jarrow! As a result, Jarrow Gaskets are the choice of many leading refrigerator manufacturers who demand the best in gaskets for their boxes. And, too, because the Jarrow Line is most complete—standardized replacement gaskets to fit nearly 95% of all commercial and household refrigerators. Ask your jobber—the chances are he stocks Jarrow Gaskets, exclusively.

★ ★ ★



Gaskets for Every Refrigerator Need
Watergroof, Sponge Rubber, Rubberized Fabric, Extruded, Grease-proof Synthetic Rubber, Sponge Rubber Tubing

JARROW PRODUCTS
Factories: Chicago and Grand Rapids
General Offices: 420 N. La Salle St., Chicago

Sale of Coal & Oil Heating Stoves for Homes Are Rationed In 30 States

WASHINGTON, D. C.—Coal and oil heating stoves for private dwellings in the 30-state fuel oil rationing area are rationed beginning Dec. 18, under an emergency request received today by the OPA from the WPB.

The program, which virtually suspends sales of oil heaters in the 30 states, but makes coal heaters freely available to those householders who wish to convert from oil to coal, has two main objectives:

First, to stimulate further conservation of fuel oil; and

Second, to assure that domestic coal-burning heating stoves made from iron and steel recently diverted for this purpose by WPB find their way only into the hands of those who should have them.

New cooking stoves, new stoves designed to burn wood exclusively, and used stoves are not affected by the emergency rationing order.

Primarily eligible to buy a coal heater under the emergency order are householders who will use the new stove to replace oil-fired heating equipment. These persons merely are required to obtain a purchase certificate from their local War Price and Rationing Board and surrender their unused and unexpired fuel oil ration coupons.

Other eligibles are:

1. Persons who need a stove to heat essential living or working space which is at present not heated at all, and who have not disposed of any usable heating equipment within 60 days prior to the date of application. Such persons will be asked to sign a statement to this effect.

2. Persons whose present coal-burning equipment is damaged or worn out beyond repair must provide the Board with a statement to that effect, this statement bearing both their own signature and that of the dealer or heating contractor.

3. Persons who are eligible under the fuel rationing regulations for an auxiliary ration of 350 gallons or more of oil, and who will use coal-burning equipment instead. (Sickness or infirmity are the main grounds for obtaining auxiliary oil rations.)

"This is a unique rationing program," Price Administrator Leon Henderson said. "Instead of asking the public to refrain from buying or limiting its purchases severely, we are making coal heaters available to everyone who can use one and who is eligible under the program.

"The only restrictions imposed by the new program are those that will prevent this heating equipment from going into the hands of those who may not really need it.

"Recent orders of the War Production Board have released sufficient metals and productive capacity to provide as many as 250,000 coal burning stoves per month while a further stockpile of 15,700 military models originally built for heating barracks has been released by the Army for civilian sale. We simply want to see that these stoves go where they will do a maximum of good in meeting the fuel oil shortage.

"Of course, it will not be possible to make provision to convert all of the millions of oil-fired space heaters now in use in the 30-state fuel oil rationed area, but there is no reason why urgent needs cannot be met, especially in the northeastern States where the oil transportation saving will be greatest and the cold wave most severe."

Restrictions on the sale of oil-burning stoves are severe. Issuance of purchase certificates will be limited to those householders who are replacing oil-burning equipment that is beyond repair and who, in addition, can satisfy the board on one of the following counts:

1. That no one in the household is physically able to operate coal-burning equipment;

2. That the space to be heated is a house-trailor;

3. That no coal or coal-burning equipment is available; or

4. That the space to be heated has no flue, chimney, or other provision for venting.

Mr. Henderson also pointed out that heating-stove rationing involves a minimum of red tape. Local boards have been instructed to use purchase certificates already on hand. Stove dealers will continue to conduct their business in a normal manner, except that they may sell only against the presentation of a purchase certificate. No inventory reports are required under the emergency program.

A purchase certificate issued by the Board for any kind of a rationed stove must be surrendered to the dealer when the stove is delivered or installed. If the purchase is made from someone other than a stove dealer the certificate must be endorsed by the purchaser, and returned to the local board which issued it.

No purchase certificates are required with respect to coal or oil heating stoves bought by the Army, Navy, Marine Corps, or Maritime Commission.

New Members of A.S.R.E.

Eight of Norge's appliance refrigerator engineers recently were accepted as members in the Detroit section of the American Society of Refrigerating Engineers. But these boys are not making refrigerators anymore. The picture shows them grouped around one of their achievements, a hydraulic powered .50 calibre, twin machine gun turret, made by Norge for the British Navy. Left to right (standing) Harry Topel, Warner Baule, Bill Kohler. (Seated) Ed Valites, Max Lee, Harold Philps, George Fleck, Bill Oswald.

Philco Process Cuts Use of Materials In Artillery Fuses

PHILADELPHIA—Development of new methods and processes which will save 54,505,800 pounds of brass, aluminum, and copper a year in the manufacture of M-48 and M-51 artillery fuses and boosters for the Army at present rates of production, if put into effect by all suppliers of these items, was announced today by James T. Buckley, president of Philco Corp., in a letter to stockholders accompanying the Dec. 12 dividend checks.

The possible annual savings growing out of these Philco developments, according to Mr. Buckley, are as follows:

47,116,000 pounds of brass.
5,464,800 pounds of aluminum.
1,925,000 pounds of copper.
90 multiple-spindle and 10 single-spindle automatic screw machines released for other purposes.

The new manufacturing methods that Philco has developed substitute steel for brass, aluminum, and copper, and press work for machine operations. "Exhaustive tests have indicated that the ordnance materiel produced by these new methods is equally as satisfactory and dependable as that previously supplied to the Army," Mr. Buckley said.

The new production methods that Philco has developed to save critical materials were described to 400 ordnance contractors and subcontractors at a meeting held recently.

Nash-Kelvinator Ready to Begin Mass Output Of Pratt-Whitney Aircraft Engines

DETROIT — The first 2,000-hp. Pratt & Whitney aircraft engines to be built by the Nash-Kelvinator Corp. have rolled off the assembly line in the company's rehabilitated automobile assembly plant in Wisconsin, it was made known by factory officials recently.

With manufacture of these initial engines completed, the company announced that it is on the threshold of mass production in the aircraft-engine field and that large-scale operations are beginning as rapidly as facilities and delivery of essential new machines and materials permit.

Of a type said to be among the most powerful now in production, the engines Nash-Kelvinator is building are equal in power to nearly 30 Nash "600" motors. They will be used to power the Navy's new, high-altitude Corsair fighter planes.

Tremendous changes in the plant were required in order to convert it into an important aircraft engine production center. The main factory building, which once housed the automobile assembly line and a great many of the car processes, presents an entirely new aspect. Hundreds of new machines have replaced the former equipment, which has been completely uprooted.

The car assembly lines were ripped out in their entirety. New floors were laid, building partitions torn down and sweeping alterations made. A complete new lighting system was installed to provide daylight conditions for 24-hour operation. What was once a "chain" of building sections, now appear inside as one huge new plant, with a main corridor running uninterruptedly down the center for nearly a half mile.

New installation—hundreds of specially-designed machines and an entirely new assembly line—have been largely completed, although some machines are still required before peak production can be reached. The huge shipping building, which once housed a maze of railroad tracks and loading platforms, has been completely rehabilitated, the tracks covered over and now houses important production facilities.

In addition, an entirely new building for final assembly, testing and shipping has been constructed. Large and completely modern in design, the new building is said to be the most nearly ideal in layout efficiency yet constructed for its purpose. Facilities for storing great quantities of gasoline underground were built, as well as new railroad spurs and concrete driveways for deliveries of material and shipment of engines.

Special test cells have been built for the long run-ins and exhaustive tests the engines must undergo. The cells, of massive steel and concrete construction, permit the engines to be checked accurately for top speed and power—power that is expected to give our Navy fighter planes greater speed and the ability to operate at higher altitudes than any other aircraft.

Profiting by the experience of other manufacturers, Nash has equipped the test cells with the most modern noise-eliminating methods, involving the latest principles as developed by sound engineers.

Production calls for unprecedented precision in manufacture. Parts are processed with infinite care, and average tolerances are less than half the thickness of ordinary cellophane.

For Unfailing Performance use "DETROIT" Throughout

"Detroit" Dura-Fram Expansion Values Offer These Desirable Features:

- Gas charged power elements. Greater sensitivity, quicker balancing, protection against motor overload.
- Single diaphragm construction. Compact, and easy to handle.
- Deluballoy needles and seats. Tough, corrosion resistant.
- Silver brazed joints. Greater strength. Prevent loss of refrigerant.

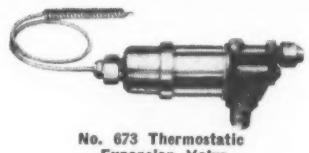
The No. 787 "Dura-fram" Valve is illustrated with the No. 790 Refrigerant Distributor installed in the outlet. No. 790 Distributor is available with as many as 18 outlets. The "Dura-fram" line includes both Automatic and Thermostatic types. Automatic types, Nos. 892 and 895 are made in capacities of ½ ton and 1 ton Freon respectively. Thermostatic Valves, Nos. 894 and 896 rated for ½ ton and 1 ton, respectively, are non-adjustable. Nos. 893, 897, 786, 787, and 788 are adjustable Thermostatic Valves, and range in capacity from 1 ton to 20 tons Freon.

For complete information write for Condensed Catalog 200-A and Bulletin 190.

No. 787 "Dura-Fram" Expansion Valve with multiple outlet distributor.

No. 893 'Dura-Fram".

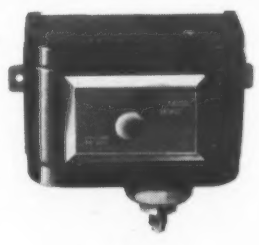
No. 892 "Dura-Fram" Automatic Expansion Valve.



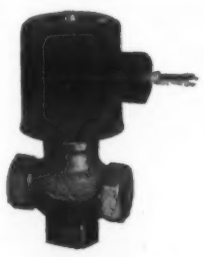
No. 673 Thermostatic Expansion Valve.

The "Detroit" No. 673 Thermostatic Expansion Valve has been the standard of the industry for many years. It employs a sensitive gas-charged power element, providing quicker pull-down, better balance in the system and protection against motor overload. Wide selection of orifices available. Write for Catalog 200-A and Bulletin 82.

"DL" No. 450 Series Control Switches provide a complete line of pressure and temperature operated controls for all types of refrigeration and air conditioning applications. Major parts are replaceable and interchangeable on the job. Write for Catalog 200-A or Bulletin 181.

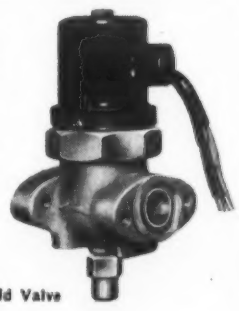


No. 450 FIB-3 Low Side Pressure Control.



No. 683 Solenoid Valve

"DL" Solenoid Valves are available in a complete range of sizes with capacities to 17 tons Freon, and for all standard voltage and cycles. They are sturdy and dependable in operation. Special design eliminates any objectionable A.C. hum. "DL" Solenoid Valves may be taken apart in the field for cleaning and inspection. The No. 683 is available with 3/16" or 7/32" orifice with liquid line capacities of 3 and 3¾ tons Freon respectively. The No. 681 pilot operated Solenoid Valve has a capacity of 7½ tons Freon. The No. 686 Solenoid Valve with ½" orifice is rated at 11 tons and with ⅝" orifice 17 tons Freon. Write for Bulletin No. 199.



No. 686 Solenoid Valve

DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Official--From OPA

Service Trades Bulletin Provides Compliance Rules on Order 165

4 Simple Rules Given for Serviceman to Follow

WASHINGTON, D. C. — Service Trades Bulletin No. 1, issued recently by the Retail Trade and Services Division of the OPA, covers a number of questions on the determination of ceiling prices for maintenance, rental and repair of household appliances and electrical equipment under Maximum Price Regulation No. 165, as Amended—Services.

Included among services for which the regulation sets top charges are the repair, maintenance, or rental of the following:

Electrical equipment and appliances used in homes, hospitals, hotels, offices, retail establishments, schools or other institutions. Typical articles are food mixers, ironing machines, lamps, ranges, household refrigerators, sewing machines, vacuum cleaners, washing machines.

Gas appliances, except gas furnaces, industrial equipment, unit heaters, or water heaters.

Radios and phonographs except those primarily designed for commercial, military, or police use.

Also included are the prices of all commodities, such as parts and accessories, when sold in connection with the sale of a service. The regulation contains a complete list of the services which it covers.

The bulletin has simplified the order's requirements into four simple rules which must be followed to comply with the regulation:

1. Charge no more than you did in March 1942. (For more detailed information on how to determine price ceilings for service work, the reader should refer to the chart on page 14 of the Nov. 9 issue of AIR CONDITIONING & REFRIGERATION NEWS).

2. Keep all records showing prices charged during March, 1942.

3. File with your local War Price and Rationing Board (if you have not already done so) a list of your March services and prices, and keep it up to date.

4. Furnish sales slips and receipts to customers if this was your practice in March 1942, and furnish sales slips and receipts to any customer on request.

All service companies are advised to keep all records which have any bearing on prices charged in March, such as duplicates of customers' sales slips, invoices, work orders, posters, display cards, advertisements, letters, post cards, etc., in which service prices were quoted.

The bulletin also gives information on the required statement of maximum service prices charged for all services and repairs supplied during March 1942 for which prices were regularly quoted during that month.

This statement must be kept in the place of business, and available for examination by anyone so desiring. A copy of the statement is to be filed with the local War Price and Rationing Board.

The statement must be kept up to date by listing any new types of services or repairs within 10 days of the first sale, and a record of these prices must be filed with the local rationing board within 20 days.

In preparing the statement of maximum service prices (which may be on the firm's own stationery or plain white paper), the bulletin lists several things that must be included:

1. A complete description and identification of the services you supplied during March 1942 for which you regularly quoted prices in that month.

2. The highest prices you charged for these services during March 1942.

3. The rate or pricing method you regularly used during March 1942, including your charges for labor, parts, and materials for services on which you did not have a flat or set price.

4. All customary allowances, discounts, and other price differentials which you customarily allowed or offered in March 1942.

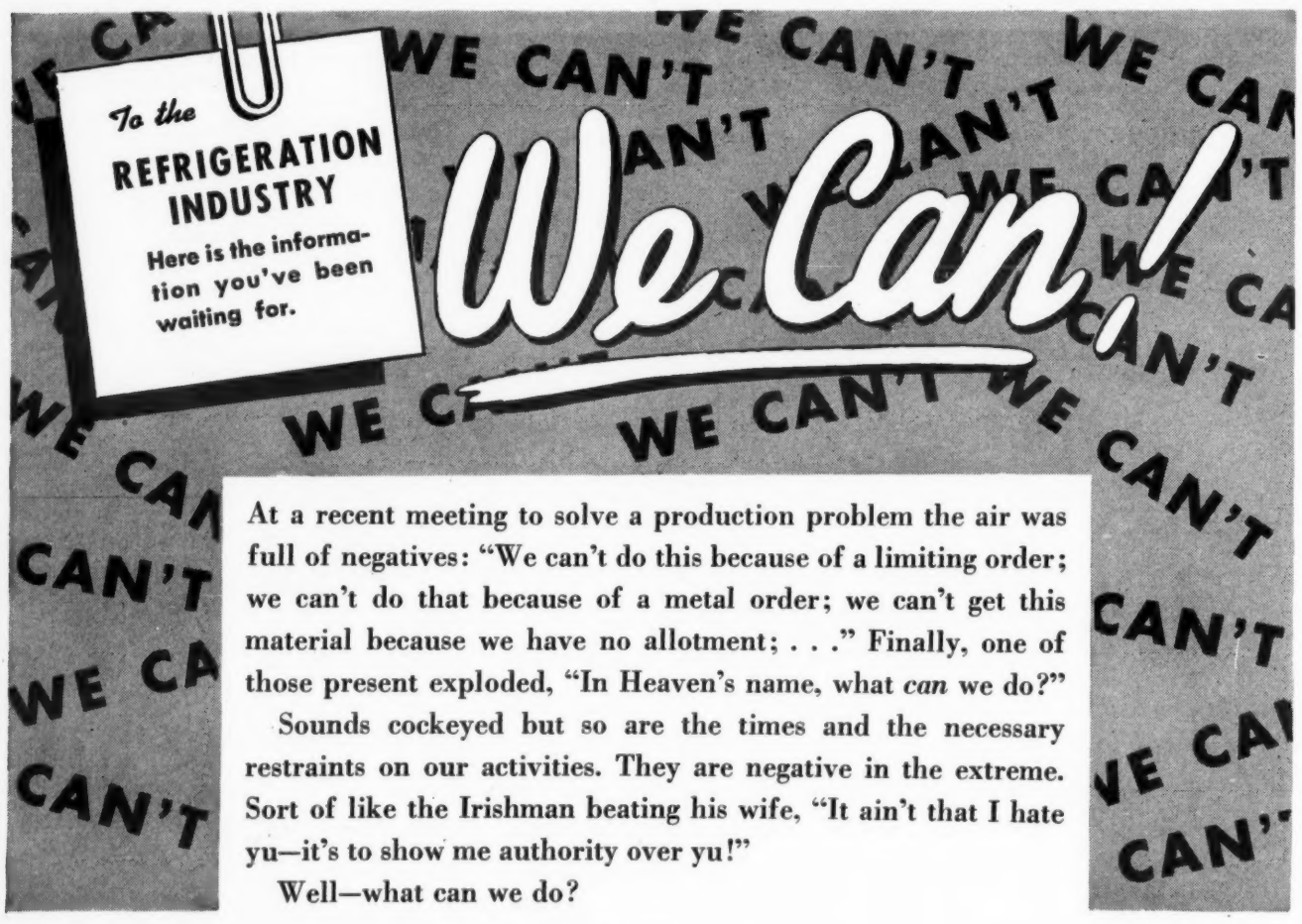
For OPA's official a sample statement of maximum service prices, readers should refer to page 10 of the Sept. 14, 1942 issue of the NEWS.

Who Says Service Can't Be Mechandised?

To those who complain that it's difficult to merchandise the servicing of appliances—that you can dramatize such a vital function, this window display in the R. K. Owens Electric Shop of Bellefonte is offered as a rebuttal. While the display is on washing machines service, the principles could be applied to refrigeration or any other appliance.

The main display consists of a large assortment of washer parts—with just two parts alike in the entire group. A box of candy was offered to the first person to identify correctly the duplicate parts. The novel idea of the duplication of just the one part had many people stopping long after the prize award had been given to the winner.

Sign on the side wall (not visible) read "Your Washer Must Last for the Duration—We have What it Takes to Keep 'Em Running." At the back of the display two washers —one an old, decrepit model, the other a reconditioned model of similar vintage—gave evidence of the wonders which a first class reconditioning job can perform.



At a recent meeting to solve a production problem the air was full of negatives: "We can't do this because of a limiting order; we can't do that because of a metal order; we can't get this material because we have no allotment; . . ." Finally, one of those present exploded, "In Heaven's name, what *can* we do?"

Sounds cockeyed but so are the times and the necessary restraints on our activities. They are negative in the extreme. Sort of like the Irishman beating his wife, "It ain't that I hate yu—it's to show me authority over yu!"

Well—what can we do?

HERE'S WHAT Chieftain CAN DO!

1. We are in production on a full line of conventional type compressors and condensing units up to and including one HP and expect to continue for the duration.

2. We can accept and fill any rated orders. To secure prompt shipment the preference rating should be, at present, in high AA brackets—or the equivalent after succeeding priority inflations.

3. Our engineering department is prepared to give you help in designing special units to meet the various government specifications and unusual applications that are constantly coming up in connection with the war effort.

4. We are in a position to make you quotations on any of our equipment that you may require, the prices being based on the low levels of October 1st, 1941.

5. We will be glad to send you full catalog information and solicit your inquiries.

6. We are repairing or replacing in our service department all products, that need attention for any reason in the field, on our liberal flat charge Factory Rebuilding Plan. This includes hermetics as well. We have accepted every order for repair parts when accompanied by a high enough rating so that it could be filled under the metal and limiting orders then in effect. A-10 is good enough on parts and replacement compressor bodies; A-1 or AA ratings on units.

7. The trade name "Chieftain" is still a vital force in the refrigeration industry just as it was before Pearl Harbor.

8. Our plant is 100% war effort, not only in refrigeration for the armed forces and essential civilian needs, but also in direct war munitions as well. Testimony to this fact proudly flies from our flag pole—a Navy "E" pennant with one star.

★ *We sincerely hope that the above points definitely answer a lot of questions in the minds of the refrigeration trade. If more detailed information is required please wire or write our Sales Department.* ★

Chieftain

TECUMSEH PRODUCTS COMPANY • TECUMSEH, MICHIGAN

HUSSMANN

Call HUSSMANN for

COMMERCIAL REFRIGERATORS

HUSSMANN WALK-IN COOLERS

KE Type Government Mobilization Construction Equipment, complete with Refrigeration
Marine Corps Coolers
Army Transport Coolers
Navy Portable Carrier, complete with Refrigeration

MORTUARY COOLERS

RIVET COOLERS --- ICE CHESTS

HUSSMAN REACH-IN REFRIGERATORS

US Models 65—20—27—45A—45B—60A—60B—85—100—US-8
US-60 and US-70 Self-Contained
Capacities 20 cu. ft. to 100 cu. ft.

HUSSMAN REFRIGERATION EQUIPMENT

Compressors, Coils, Accessories,
Complete Installation and Service.

COMPLETE SYSTEMS— Cafeteria Refrigeration, Water Cooling, Complete Refrigeration for Government Warehouses for Domestic and Export Use, Including all sizes such as CS-10, CS-15, CS-30, CS-45 and CS-60.

We have also in the past supplied more than 20,000 Hussmann Refrigerators and Refrigeration Systems to various government departments such as the Quartermaster Corps, Engineering Corps, Medical Corps, Treasury Department, Air Corps, Marine Corps, Coast Guard, and other government projects.

Also Refrigerators and Refrigeration for Post Exchanges and Defense Plants

HUSSMANN-LIGONIER PRODUCTS

Allied Store Utilities Co. Hussmann Bldg. St. Louis, Mo.

Silica Gel Granted Full Allocation by WPB Chemicals Div.

WASHINGTON, D. C.—All civilian requests for silica gel have been granted in full in the December allocations announces the Chemicals Division of the War Production Board in its third monthly report issued here on allocation of individual chemicals.

Four other substances used by air conditioning and refrigeration industries are included among those reported on in the current statement, most comprehensive picture of scarce chemicals yet released by WPB. Explains the board, "Where reduction was made, the percentage figure shows the relationship between the amount granted and the amount requested."

According to the report:

Requests for Anhydrous Ammonia are granted in full for refrigeration purposes;

The amount of Aqua Ammonia asked for is granted in full for water purification and refrigeration;

Requests for shellac to be used are granted in part for use in air conditioning (5%).

Requests for shellac to be used for refrigerators and washing machines are granted in part (45%).

The announcement stresses that allocations reported apply only to civilian industry and do not include direct military needs.

Interpretation Given On Requisitioning of Idle Copper Stocks

WASHINGTON, D. C.—In a press issue Nov. 4, relating to prices offered by the Copper Recovery Corp. for idle or excessive inventories of copper and copper base alloy products, it was stated: ". . . the War Production Board points out that sale of all items listed is not compulsory, and will not be sought through requisitioning. Among these are products whose cost was substantially above the 28 and 30 cents a pound maximums the government offers."

In order to avoid misinterpretation, the Materials Redistribution Branch of the WPB makes it clear that, if necessary, the government will requisition:

1. Any and all copper and copper base alloy products in primary form except those whose cost to the holder was substantially above the 28 and 30 cent maximums mentioned in the copper recovery price schedules, and

2. Any and all copper and copper base alloy fabricated products, except those which have been fabricated from primary forms whose cost to the holder was substantially above the 28 and 30 cent maximums mentioned in the copper recovery price schedules.

These exceptions are clearly indicated in the copper recovery price schedule and there are no others.

OPA Ruling Puts End To Distributor Pricing By Class of Dealer

WASHINGTON, D. C.—The Office of Price Administration has issued an interpretation on Maximum Price Regulation No. 110—Resale of New Household Mechanical Refrigerators, defining the phrase "same general class of dealers" as it is used in the Order's paragraph stating that a distributor must provide identical services to all in the same general class of purchaser.

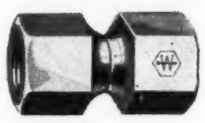
The interpretation was found necessary because some distributors in the past grouped their dealer-purchasers into several classes on the basis of estimated volume of purchases which could be expected, and granted discounts ranging from 30 to 40° for these classes. But now that all dealers have become small-volume purchasers, distributors have sought to equalize the classes.

The OPA interpretation states that the distributor may reduce his discount to 30% for all purchasers inasmuch as they are all small-volume purchasers.

★ WEATHERHEAD ★

Refrigeration Valves, Fittings and Accessories

VALVES AND FITTINGS

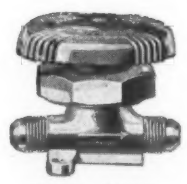


VALVES include angle, two-way, three-way, packless, compressor, by-pass, check, receiver tank and relief types.

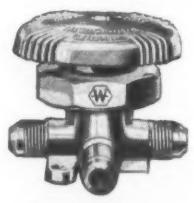
FITTINGS have an exclusive flat-sided construction that provides no-slip, no-strip, no-leak installations.

PACKLESS VALVES

Only four working parts • Full capacity for Refrigerant • Large Diameter Seat and Stem • Inlet and Outlet connections on same level • Low overall height • Beryllium Copper Diaphragm, tested through 100,000 on and off cycles

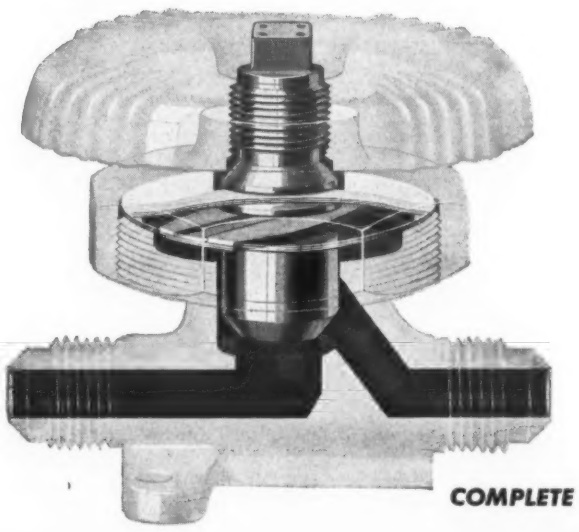


TWO WAY



THREE WAY

ANGLE



SILICA GEL DRYERS AND FILTERS

NO GASKETS • NO SOFT SOLDER • NO LEAKS

BODIES of Weatherhead dryers are made from steel tubing with formed steel ends and corrosion-proof screens hydrogen welded into an integral assembly. All are pressure-tight and tested to 250 pounds of pressure. There's no danger of leakage because no gaskets or soft solder are used.

Since Silica Gel does not pack or cake, full flow of refrigerant is assured even at zero temperature.

RECHARGEABLE AND NON-RECHARGEABLE TYPES

Weatherhead rechargeable dryers can be readily refilled, while non-rechargeable dryers are designed for permanent installation after the system has been completely freed from moisture.

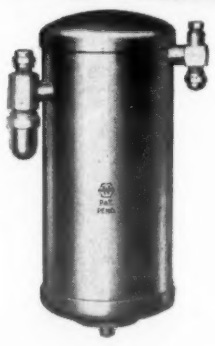
Rechargeable dryers have universal connections so that by using the proper S.A.E. reducing unions, ells or tees, the dryer can be used on any size line.

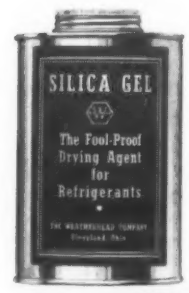
Rechargeable dryers from 1/3 to 7 h. p. rating.

Non-rechargeable dryers from 1/8 to 1/3 h. p. rating.

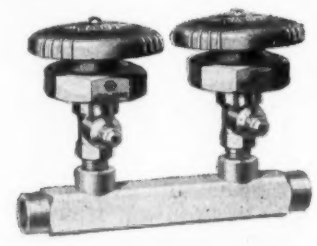
ACCESSORIES

RECEIVER TANKS — horizontal and vertical. Processed from steel tubing with end caps and fittings hydrogen welded into an integral assembly. Leak-proof construction.

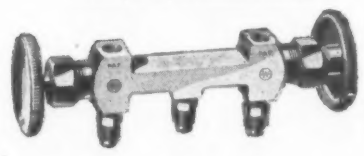




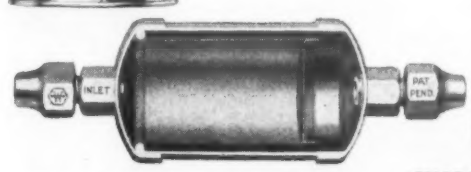
SILICA GEL—The fool-proof, chemically inert drying agent that removes moisture and other materials by absorption. Does not dilute the refrigerant.



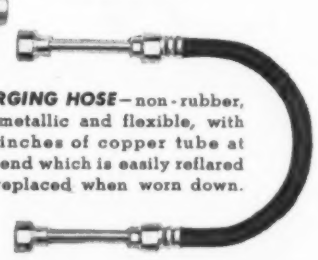
MANIFOLD ASSEMBLIES —assembled with either Packless or Packed Valves.



TESTING VALVES—a tool of many uses for charging and testing to check systems for leaks. Makes recalibration of gauges easy.



STRAINERS—seamless steel tubing with formed ends and stainless steel screens hydrogen welded into an integral assembly.



CHARGING HOSE—non-rubber, non-metallic and flexible, with four inches of copper tube at each end which is easily reflared and replaced when worn down.

COMPLETE CATALOG ON REQUEST

★ THE WEATHERHEAD COMPANY ★

300 EAST 131st STREET · CLEVELAND, OHIO

Trade School Set Up To Train Refrigeration Mechanics For Army

(Concluded from Page 1, Column 2)

The school will operate under a contract with the Quartermaster Corps, executed by the 6th Service Command and will have several hundred soldiers in attendance at all times for 12 week periods.

The course will be devoted to an extensive study of the various leading makes of domestic and commercial units used by the army.

The president of the Commercial Trades Institute is R. E. Tucker and school manager, R. C. Anderson. Entrusted with the supervision of instruction is N. R. Newman, formerly of New York State university and at one time New York State service manager for Norge, and R. L. Hendrickson, past secretary of the educational committee of the Refrigeration Service Engineers Society and well known in refrigeration circles.

The first contingent of soldiers is due to arrive in Bloomington shortly after the first of the year. The Institute has also arranged for the quartering and feeding of the men during their training period.

Firm Formed in Long Beach

LONG BEACH, Calif.—Neel Refrigeration Service Co. is the firm name under which Haskell Neel and Frank L. Redman have obtained a certificate to conduct business at 1701 East Anaheim Blvd., Long Beach.

Air Sterilization in Public Places Gets Scientific Attention

NEW YORK CITY—Sterilizing the air in schools, theaters, subways, and other public gathering places to prevent the spread of influenza, colds and similar infectious bacterial diseases has been reported a possibility by both the English and American scientists.

The English use an aerosol or fine mist of hexyl-resorcinal in propylene glycol, a type of anti-freeze chemical. The Americans use propylene glycol aerosols and later propylene glycol vapors.

In experiments reported in Science by Professor W. F. Wells and Dr. Peter Zappasodi, University of Pennsylvania School of Medicine, it is now revealed that humidity plays an important role in air sterilization.

EXPERIMENT RESULTS

High humidity neutralized, while low humidity masked, the disinfecting action of propylene glycol vapor, the experiments showed. Disinfaction was "most apparent" at intermediate humidities.

Dehumidification with calcium chloride, they found, had a killing effect on the test bacteria comparable to that of propylene glycol. This leads the Pennsylvania scientists to point to the possibility that the results reported by the English and American experimenters may be due less to the germ-killing effects of the disinfectants used than to the drying produced by glycol vapor.

Joseph Weiner Named Director of Office Of Civilian Supply

WASHINGTON, D. C.—Leon Henderson, who has been holding the two offices of Price Administrator and Chief of WPB's Civilian Supply, has tendered his resignation.

Former Deputy Director of the Civilian Supply Office Joseph L. Weiner has been designated to succeed Henderson as head of Civilian Supply by Donald M. Nelson.

Under the severe war economy which will prevail through the country next year, the task of regulating civilian supply, including supervision of the concentration of many consumer-goods industries will involve a tremendous amount of work — too heavy a load for one many to carry it is understood by all those in close touch with both WPB and OPA. For this reason there will be a split in the directorship of OPA and OCS.

Distributor Discovers Public Loud-Speaker Systems Good Sideline

MILWAUKEE—A "sideline" worth looking into for the duration is large scale public address systems, according to Roth Appliance Distributors, Inc., here. The Roth concern has been merchandising sound amplification systems for several months, for the most part to replace small intercommunication systems in war plants and factories.

'E' Award Is An All—Brunner Affair

Lieut. Commander William M. Cashin of the U. S. Naval Reserve, "on leave" from the Brunner Mfg. Co., returned to the condensing unit manufacturing plant recently to fasten the first Army-Navy "E" pin on the lapel of Lucius Parker, Brunner's oldest employe, as President George L. Brunner, Sr., company president, looks on. The award ceremony, witnessed by 1,000 Brunner employes and Utica citizens, saw the "E" banner given for unusual achievement for War production.

Salesmen Go Back to Service Work, Only to Find It Leads to More Sales

BIRMINGHAM, Ala.—After coming up "the hard way" through the mechanical end of business, George D. Maske and W. C. Kent, proprietors of Maske & Kent Refrigeration Co., distributors for Warren equipment in this city, have again taken up their tools and are personally handling repair jobs.

Although still well stocked with old and new machines and cases for merchandising, they are taking with them on their selling rounds nowdays a chest of tools and a quantity of refrigerant, ready to help out any prospective buyer with machine troubles.

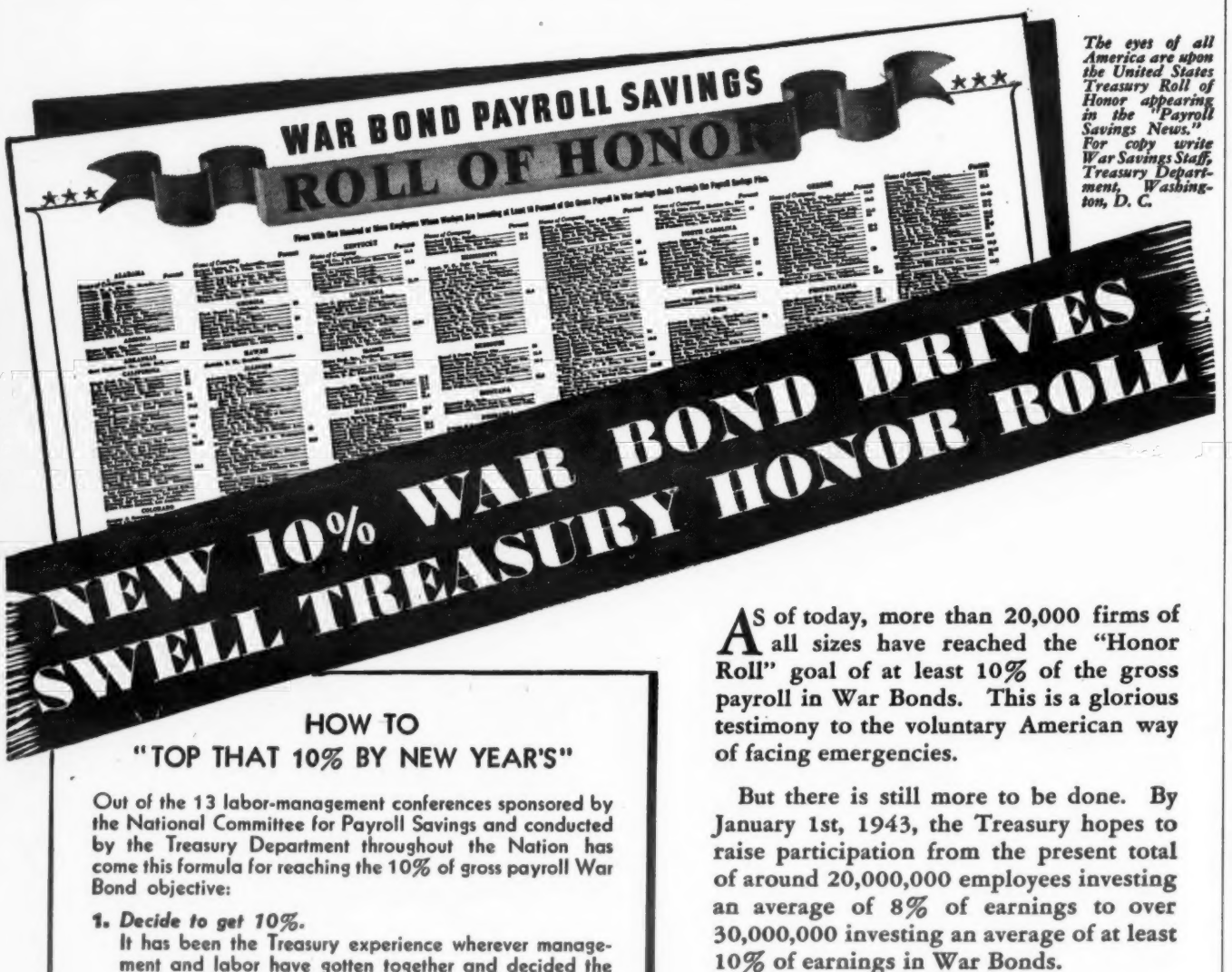
LEADS TO SALE

"Recently I called on a food handler . . . worried about a compressor which was knocking its head off for want of attention," said Mr. Maske. "With the aid of one of his men I fixed the machine in an hour's time, charged him $3 for the work, and went on my way. The next day he called me and said he was interested in the purchase of a used beverage cooler.

"So you see we are really combining sales and service."

During 1940-41, Mr. Maske and Mr. Kent set quite a pace in refrigeration sales for this territory. In 1940 their company went 137% above quota in the sale of Warren equipment and in 1941 they sold $165,000 worth of goods, or 191% of the quota.

The firm still furnishes jobs on a priority basis but is looking more and more towards service work. Mr. Maske asserts that with enough gasoline to reach their customers, both he and Mr. Kent will carry on for the duration checking and repairing commercial equipment. Wondering how much fuel will be allowed to passenger cars in service work, he hopes the government will recognize a distinction between automobiles so used and those kept for private transportation only.



The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.

AS of today, more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from $50,000 to $100,000.)

TIME IS SHORT. Our country is counting on you to—

"TOP THAT 10% BY NEW YEAR'S"

HOW TO
"TOP THAT 10% BY NEW YEAR'S"

Out of the 13 labor-management conferences sponsored by the National Committee for Payroll Savings and conducted by the Treasury Department throughout the Nation has come this formula for reaching the 10% of gross payroll War Bond objective:

1. ***Decide to get 10%.***
   It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. ***Get a committee of labor and management to work out details for solicitation.***
   a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
   b. A card should be prepared for each and every worker with his name on it.
   c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. ***Set aside a date to start the drive.***
4. ***There should be little or no time between the announcement of the drive and the drive itself.***
   The drive should last not over 1 week.
5. The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.
6. Schedule competition between departments; show progress charts daily.
7. Set as a goal the Treasury flag with a "T."

EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with
War Savings Bonds

In spite of

unsettled conditions within our industry, we have endeavored to supply the needs of our old customers while also diverting much of our output to direct military and war production application.

However, for the year of 1943, we contemplate manufacturing only air-cooled condensing units in ¼, ⅓, ½, ¾ and one horse power ratings.

Just how long we can continue our present service to all fields, we do not know—

. . . but we'll do our best

Of that you may be sure

Mills
NOVELTY COMPANY
4100 FULLERTON AVE., CHICAGO

How Refrigeration Serves In Metal Treatment

Compressor Institute Study Reveals Details of New Cooling Uses For War Production

NEW YORK CITY—Compressors that produce iceless refrigeration have gone into war production work with many strange new duties, the Compressed Air Institute shows in a study of War uses of mechanical refrigeration compressors.

Refrigeration machines are given such tasks as chilling airplane instruments, freezing pitch on optical lenses and providing rigorous workouts for the molecules in high precision gauges.

Because of the accuracy with which many machine parts have to be made, the problem of accuracy in gauge production has become a prime industrial headache, the Compressed Air Institute pointed out.

It has often happened that a prospective user of one of these precision instruments has found that after he had purchased a gauge and used it for a while it would have become larger than it was originally. Rejections of gauges due to growth were entirely too frequent.

Installation of compressors to create sub-zero temperatures has proven a very effective answer to such problems in many plants, the Institute reported.

In the process of manufacturing the gauges, to prevent the annoying tendency to grow, the gauges are placed at various times in refrigerators, which develop temperatures as low as —75° F.

Chilling Before Grinding

One manufacturer stores them at sub-zero temperature until they are thoroughly chilled and then rough grinds them. After rough grinding, he places them in the box again and keeps them at the sub-zero temperature for 48 hours.

After removal once more, they are finish ground and lapped to size. The manufacturer reported "experience has shown that they do not change after this treatment. Rejections due to 'growth' have dropped to a minimum."

Another manufacturer reported to the Compressed Air Institute that after the steel in his gauges is ground to within 0.002 inch of finish size, the parts are kept from six to eight hours at —40° F. and then taken out of the refrigerator. When the temperature of the metal reaches 70° F., it is finish ground and lapped.

"In general, for carbon and vanadium steels as well as manganese non-deforming steel," a third manufacturer reported, "we usually submit the piece before the final finish grinding, to the following treatment: (1) Temper at 300° F. for suitable length of time and cool to room temperature; (2) Cool at least to —70° F. and hold for a suitable length of time and then allow the piece to come back to room temperature."

Storage of Die Sets

Some manufacturers have installed refrigeration compressors to keep their die sets at uniform size. The die sets are chilled to below zero. This keeps the guide pin alignment stable over a definite time, thus prolonging the life of dies.

The process by which gauges and die sets change in size after they are formed, is not thoroughly understood. It is believed to be a molecular phenomenon, however, and that alternate warming and chilling of the metal tends to stabilize the molecules in some way.

Some factories have installed compressors to provide cold storage for aluminum alloy (ST 24 and ST 17) rivets used in airplanes. Before they are driven, the rivets must be heat treated. This makes them soft and ductile, but after they have been kept at room temperature they gradually become hard. The hardness reduces their ultimate shear strength after being driven into an airplane wing or fuselage.

To overcome this difficulty, the rivets are kept in refrigerator cabinets until time for their use. The cold storage temperature may run as low as —50° F.

At that temperature, the rivets remain for two weeks or more at a stage soft enough to permit them to be driven.

Sheet aluminum alloys, used also for airplanes, are given similar treatment to make the sheet metal workable.

Instruments used by airplanes going into sub-stratosphere regions must be subjected to unusual tests in order that they perform properly under all conditions to which they are subjected. Therefore, they must be tested under these sub-stratosphere conditions where temperatures go as low as —67° F.

To receive the proper tests they are also put into cold chambers where the temperatures go that low and lower.

Because they are subjected to the same conditions, similar tests are given to hydraulic controls, transmission tubes, lubricants and other fluids used in airplanes, the Compressed Air Institute reported.

Another application of the cold chambers is their use in improving shrink fits. The chilling process reduces the danger of shearing, which occurs when parts are press fitted.

In airplane plants, many of the metal-working operations tend to heat up precision machines used to give the highest accuracy to aviation engines. To prevent changes in temperature, refrigeration apparatus is used for cooling the surrounding air.

Gauge Storage Rooms

Plants using accurate gauges store them in rooms in which the temperature is carefully controlled by refrigeration.

Radio instrument manufacturers have installed compressors for refrigerating where delicate instruments are tested. The problem is to keep the air free of moisture.

In the manufacture of optical lenses, the lens are coated with pitch, which has to be carefully removed, and the removal often takes as long as two weeks. So refrigerators have now come to the aid of optical lens makers. When the lenses are placed in the sub-zero temperatures, the pitch becomes hard and brittle. This causes it to crack, and then it can be peeled of very easily.

The sub-zero temperatures are also used in the testing and manufacturing of certain synthetic rubbers, while refrigeration is also used in many plants for the cooling of oils and other coolants for metal working.

War Plants Asked To Work New Year's Day

WASHINGTON, D. C.—Chairman Donald M. Nelson of the War Production Board has announced that war production factories would be expected to observe normal working schedules on New Year's Day.

"New Year's Day should not cause a break in the steady flow of production. We can best start the new year by staying on the job," he said.

Freezing Process 'Holds' Fruits For Canning

LOS ANGELES — A method of freezing fresh fruit to hold for canning has been developed for commercial use by the Western Regional Laboratory of the U. S. Department of Agriculture, at Albany, Calif.

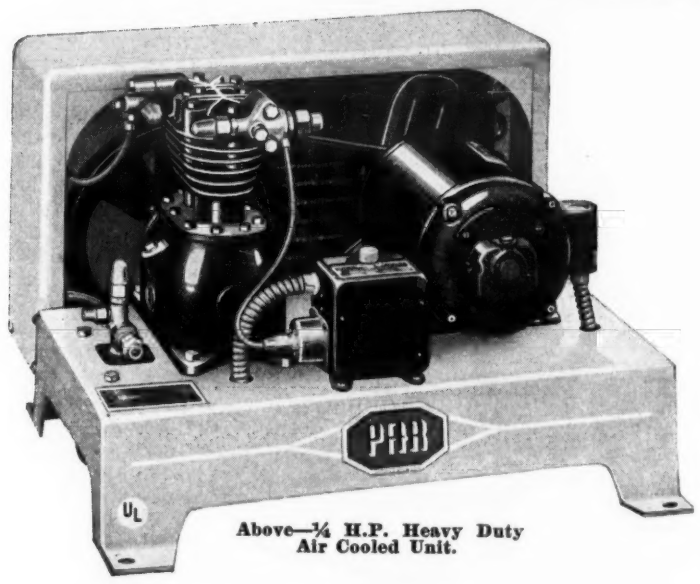
Almost any fruit may be picked and placed in freezing storage at the proper state of maturity, it was explained by D. G. Sorber, senior chemist of the commodity processing division at Albany. The processor may then take the frozen fruit from storage as required and peel it before defrosting by exposure to steam for a few seconds. The fruit is then defrosted by boiling or by exposure to live steam.

Because deliveries from orchards often come faster than the packers can handle them, spoilage is frequently heavy and may become very serious where labor shortages accur. Cold storage and container costs will be heavier than by the old method of canning at top speed from immediate crop deliveries.

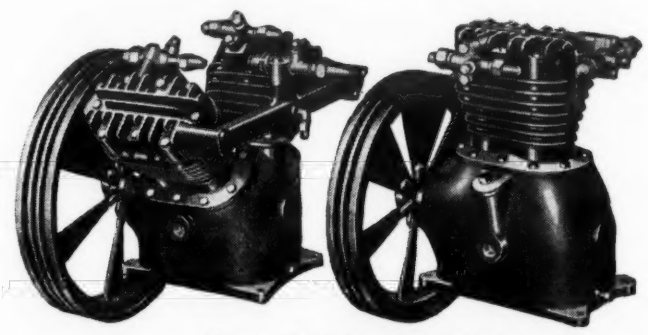
LYNCH MANUFACTURING CORPORATION
DEFIANCE, OHIO, U.S.A.

PAR

Makers of PAR Commercial Refrigeration Equipment



Above—¼ H.P. Heavy Duty Air Cooled Unit.



Above: PAR 2 and 4 Cylinder Compressors.

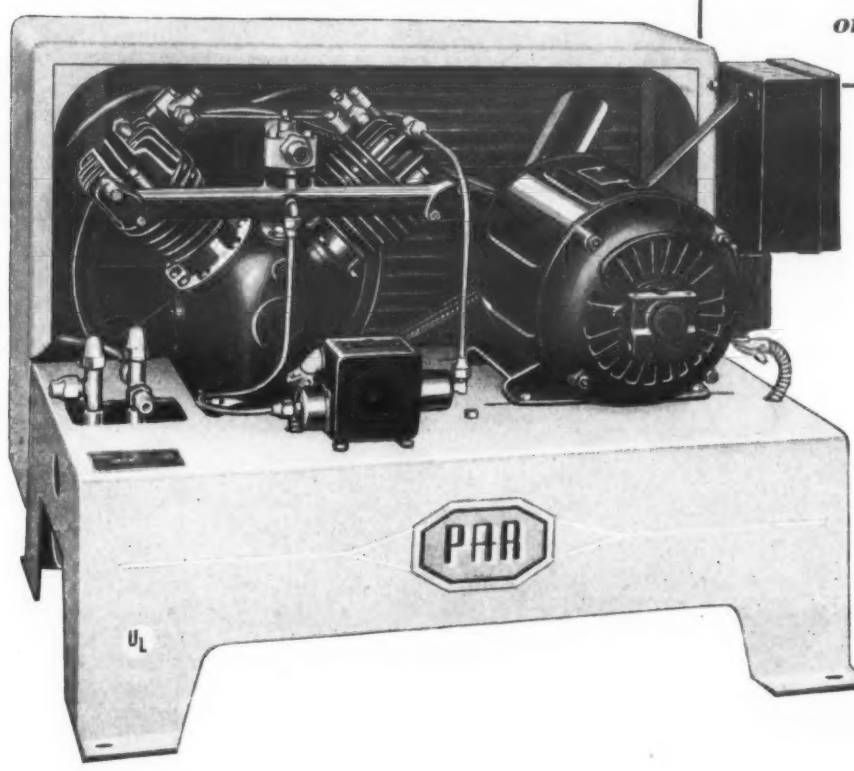
THE PAR LINE OF CONDENSING UNITS comprises a complete line of heavy duty units in sizes from ¼ H.P. to 5 H.P. and will handle any application calling for 500 to 70,000 B.T.U. capacity per hour.

Although our war effort has of necessity curtailed the number of models available, correct models and proper sizes can be furnished for essential installations.

PAR CONDENSING UNITS have 28 outstanding features including the Underwriters Laboratories Re-examination Service . . . all complete units and compressor bodies are tested and listed under U.L. Seal.

PAR EQUIPMENT has been giving outstanding service throughout the entire Western Hemisphere and in many foreign countries. For years of economical and satisfactory service choose PAR.

See your local PAR jobber or write for complete details.



At left: 5 H.P. Heavy Duty 4 Cylinder Water Cooled Unit.

Major Johanneson Tells How Army Trains Refrigeration Technicians

Procedure Followed at Refrigeration Training School at Camp Lee Told to Engineers

By MAJOR ALLAN JOHANNESON,* Chief, Refrigeration Training School, Quartermaster Replacement Training Center, Camp Lee, Va.

In this discussion of our school objectives, operations and progress, you gentlemen will realize that there are some topics I must avoid, and some questions you may have that I may find it necessary to decline answering.

We, that is, my staff and self, picture our school as having two objectives, the larger being to produce what we choose to call "soldier technicians" capable of handling all tasks attendant to all related phases of an important item of supply in what has been termed a "War of Supply."

The second and more concrete objective is to promote the abilities and capabilities of the soldier student by training him in the use of tools and equipment peculiar to refrigeration work, as well as the ones usually considered standard for mechanics.

Pipe and Tube Fittings

We familiarize him with pipe and tube fittings, their specific uses, care and peculiarities, such as the reason for not using brass fittings in ammonia service. The multiplicity of accessories such as gages, controls, etc., are discussed with a view to their value as related to refrigeration.

Controls come into sharp focus in our course inasmuch as present day equipment is tending more and more to completely automatic operation. We require a sound knowledge of the physical and chemical characteristics of the four refrigerants normally used, and a speaking acquaintance with the numerous other ones.

The operation and care of the various pieces of refrigerating machinery, such as compressors, pumps, fans, and engines get quite a bit of time and detail. Heat flow instruction, in theoretical as well as practical aspects, is treated as a basic need and creates a great deal of interest even among the older, more experienced students.

As is to be expected, the refrigeration cycle in its simple and more complicated forms gets intense treatment, the bulk of which treatment is on the compression system.

Ice manufacturing applications of refrigeration earn their portion of the schedule time with problems of brine flow, brine treatment, number of cans per ton, types of raw water treating processes, types of equipment, harvesting procedures, etc.

Safety Precautions

Safety precautions are driven home as solidly as possible to eliminate unearned casualties. The refrigeration companies are closely coordinated teams that need every available man.

In addition to the foregoing topics, a schedule of instruction for cold storage operations is given the students. This schedule includes all operations related to the reception, checking, inspection, proper storage, and correct speedy issuing of perishable subsistence stores.

Clerical knowledge of Government form handling, ability to distinguish the various fungi, diseases, etc. as well as physical causes for food to be considered unfit for human consumption, or not up to U. S. Army specifications, proper storage processes, and adequate sanitary measures all come into this part of the schedule.

The dose prescribed so far should leave no doubt in your minds that our course is streamlined to the nth degree. The elimination of false moves, non-essential discussions and distracting class room and shop influences, on the one hand, and the utilization of all the tricks known to the teaching trades on the other, are critically important watchwords for our entire staff.

Teaching Procedure

Teaching methods and psychology have been quite well standardized the world over, the primary aim being to get your subject over to the students in a form mentally digestible to them, with good ordinary horse sense dictating the particular method most effective for each individual problem.

We consider our task peculiar in that, as small groups of students are added at the first of each week, it is necessary to isolate weeks, one from the other, taking generalities and basic principles of the topics to be covered in the particular week, and developing them to specific details and logical conclusions at the end of the week.

Direct lectures have long been considered the poorest form of educational means, controlled discussions have the added value of raising student interest and enthusiasm, demonstrative lectures are more effective in that they are concrete and reach more of the students' receptive senses, and are particularly effective when students are chosen at random from the class to perform the demonstration under the instructor's direction.

Directed, progressive, standardized shop jobs are invaluable, and extremely so when scheduled to follow immediately after instruction in the problem and its practical application to refrigeration.

This type of effort, when supplemented by routine practical operation, and "catch as catch can" maintenance and service calls, should give a dependable, effective man for any operation requiring confidence in decisions and ability to carry through to ultimate objectives.

One thing we have found since starting our school, is a more than gratifying display of enthusiasm on the part of the students. I must modify this by adding that this applies only when the students can be brought to realize the practical value of instruction.

Typical Problem

A lecture on means of determining capacities of ice tanks at different brine temperatures, brine temperatures required to produce desired quantities of ice in a given tank, etc., requires reference to tables and mathematical formulae and is quite a dry discussion as you can well appreciate. To start a lecture class on this subject we say:

"Gentlemen, if you were sent to operate a strange ice plant, how would you determine the amount of ice it could produce? If you were instructed to make 20 tons of ice a day, how would you know what temperature should be maintained in the brine tank? The answer to these questions should be easily determined if you will follow closely the step by step procedures I will now outline for you—."

You can see, by this one example of the countless methods of creating a pointed interest in a subject, how we play upon the students' appetite for practical information.

I should say that this should conclude the educational problem discussion, but for one basically critical need, that being "training aids." This term can cover a multitude of sins, and a year's misdirected effort; but, be that as it may, we have come to hold in high esteem any object that can be made a point of focus, visual or otherwise, resulting in a concentration by the student on the subject at hand. Our visual aids are quite varied, ranging from inexpensive drawings of fahrenheit thermometers to hundred dollar large scale of three dollar controls.

The staff has a pre-arranged schedule, in which is listed the topics for which they are responsible, with recorded and indexed outline forms and details of training aids and instruction plans. This has given birth to what I call a wealth of "imagibility," if I may coin the word, and a long definite step towards more effective instruction, and an earlier end to this holocaust by more efficiently doing our part.

You gentlemen are looking through some of the material we use and no doubt you have some questions. While you are deciding just how to ask them, I will give you a little story to indicate some of our previously unmentioned problems:

Experienced Students

We have men with six years' experience servicing Frigidaire units, men fresh from university courses in heating and ventilating and thermodynamics, sitting alongside ice-pullers, oilers, etc., and this conglomerate group is to be trained for mobile rotary compressor gasoline engine unit operation, cold storage workers, or ice plant chief engineers.

We don't know what line of work they may be sent to so we decide to give them all general principles, to absorb which they should have an effective understanding of refrigerant characteristics, and this subject requires a knowledge of Mollier Charts which are merely graphical representations of mathematical formulae.

Some of the questions asked and discussed after Major Johannesen's talk:

"How close to the front line do you expect to have men and equipment in refrigeration companies?"

"Do you train all personnel of the refrigeration company including officers?"

"When the war is over do you believe that these men will have had sufficient training and experience to establish their own service shops?"

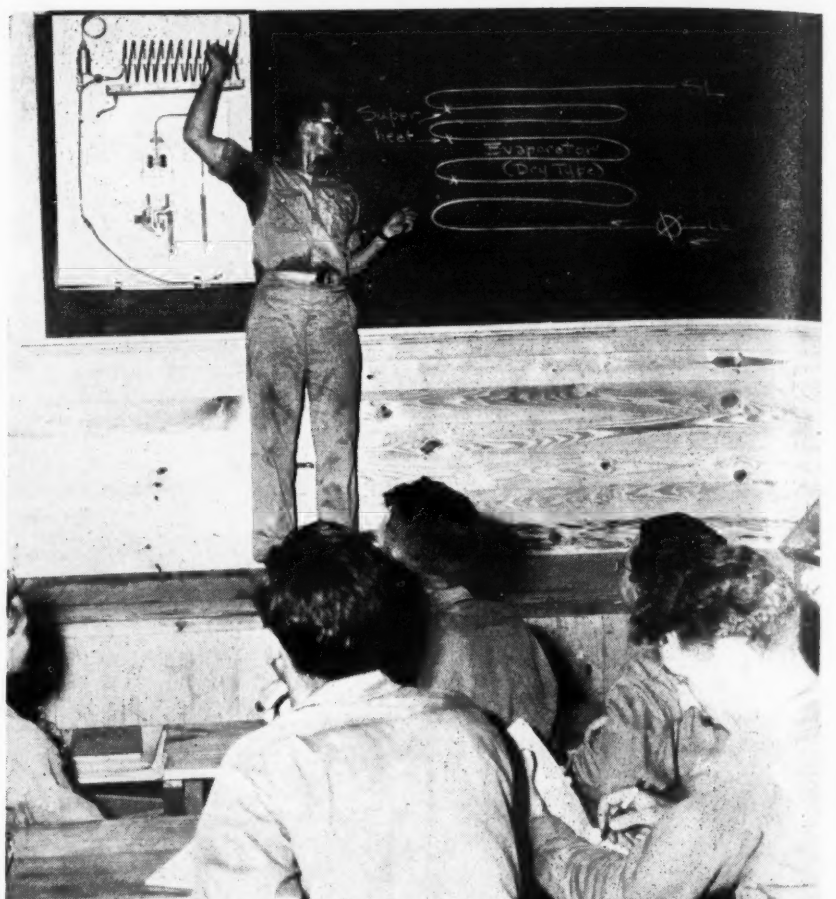
"Upon what do you base your decision to train men in basic principles first?"

"Are you sent 'Run of the Mine' men or can you specify certain limited qualifications for incoming students?"

"To what extent do you anticipate having to do maintenance work in the field?"

*Address before Baltimore - Washington section of American Society of Refrigerating Engineers.

A Lecture by the Major



Maj. Allan Johanneson, head of the refrigeration school, lectures on evaporators. Note how he relates blackboard sketch to parts on drawing.

NOW we solve Uncle Sam's low temperature and humidity problems
TOMORROW we'll solve yours
OF COURSE, we can't talk about it specifically now, but soon — we hope you'll know the miraculous things American Coils has accomplished in the field of extreme atmospheric control.
We have a feeling it won't be long before this proven technique can be applied to your low temperature and humidity developments. When that good time arrives we want you to remember — our broad experience is at your service.
• AMCOIL •
AMERICAN COILS CO.
25-27 LEXINGTON STREET • NEWARK, N. J.

If Ceiling Prices for Service Cut Profits To a Vanishing Point, Check Costs and Costing Methods

OU are in a tight spot if you were using flat rates on repair service in March and the rates were too low for profit because you must adhere to these prices for the duration of peaks. This restriction may put the dealer's and service man's business in the danger zone if he was figuring his costs too low in March.

From a survey of many such firms in the middle Atlantic states, we find that less than one half have a clear understanding of pricing requirements under ceilings, which means that they will be unable to get out from under the freeze unless they acquire understanding.

If there were "bugs" in your system of figuring flat rate prices in March and they have not been "exterminated," a dealer may be in serious difficulty, which may involve, not only a loss on operations but OPA penalties.

Price control regulations advise the dealer only on the rules for determining price peaks and leave it to him to operate under the ceilings as best he can. From a careful study of Maximum Price Regulation No. 165—consumer service, and years of experience in costing service sales for air conditioning and refrigeration dealers, we offer this counsel to aid in the profitable handling of repairs and service.

Flat rates are arrived at in four ways: (1) by guesswork, (2) by analyzing experience records of the dealer's own repair service costs on home service calls, refrigerator reconditioning, etc., (3) by setting prices in line with competition, (4) by using flat rates provided by outside agencies conversant with air conditioning and refrigeration service costs.

Under price ceilings, all of these methods may be vulnerable, therefore dealers should try to insulate themselves against loss by analyzing their flat rate peak prices in March to determine whether they were costing profitably at that time.

Costing Discrepancies

To assure profit, month-to-month, with flat rates, they should be checked for costing discrepancies. This is too seldom done. A dealer sets a flat rate and let's it go at that indefinitely. If he makes a change in price, it is usually after he has been losing money on service for some time. Such an oversight in the past was bad enough but, unless correctives are applied now, the dealer who was costing sales at a loss in March may find himself frozen to a loss for the duration of ceilings.

Those who used flat rates before March while prices were rising, who retained such rates in March, or are working on flat rates charged by the most closely competitive seller in March, are definitely in a danger zone and must shift gears quickly—or else.

We have analyzed many cases where dealers charging lower flat rates were earning more profit than those charging more. Why? Their overhead costs were more in line with their prices. In some cases, dealers have had to decrease flat rates even though materials or labor had increased because competitors undersold them on the same or similar services. As a result, sales were low, making the overhead-to-sales percentage too high for profit, even though individual flat rates had been costed seemingly at ample margins.

A cut in the flat rates then stimulated volume, reduced the overhead percentage, and increased profit, despite a bigger outlay for labor or materials or both. These are peculiarities of costing revealed only through frequent analysis of experience figures, a practice neglected by the majority, to their loss.

But, you say, March has gone into history, its peak prices on service cannot be topped. What can I do about it now? Follow this plan.

Labor and materials must carry March selling peaks. Your suppliers, unless authorized by OPA, cannot increase their prices to you for materials over their March tops. There is no ceiling on wages but every indication that they will be stabilized, hence, these two elements of cost should cause you no trouble, so long as you do not cut your current prices under the ceilings.

Old Problem of 'Overhead'

Your problem of costing flat rate service is the old one of computing overhead. Before price ceilings it was possible to "clear the decks" by increasing prices. Today that is "out." If the overhead percentage used in computing flat rates that resulted in March peak-price sales was lower than the actual overhead as shown by your books for that month, you will have trouble and should apply correctives.

Here is a simple check that will help you appraise the situation. To illustrate, let's take one servicing dealer whose records we recently analyzed. Call him Frank Stevens. His case is typical.

He thought he was making a profit at $2.50 per home service call because he paid his home service man $50 a week for 40 hours, or $1.25 per hour and each call averaged one hour. He assumed that his flat rate was ample because he marked up labor 100% on cost, yielding a 50% margin on the selling price.

If 40% is a good spread on parts or accessories, reasoned Mr. Stevens, 50% margin on labor should see me through safely on flat rate service, but it didn't always work out that way and it won't yield profits for other dealers.

In fact, 70% of Mr. Stevens' home service calls were handled at a loss even though he charged $2.50 per call. Where was the joker? Let's break down his costs on these calls and see.

How the Loss Is 'Hidden'

Mr. Stevens' home service sales run 20% of volume. His overhead expense is $18,000 yearly, hence the pro-rata overhead chargeable to home service is $3,600 (20% of $18,000), covering 300 working days or $12 a day. His home service man works 8 hours daily, therefore, each labor hour is burdened with $1.50 overhead expense, which added to $1.25 labor cost, totals $2.75. Despite a wide margin on labor, Mr. Stevens was losing 25 cents on each labor hour used on home service calls. That 30% of these calls were profitable was due largely to the profit made on sales of parts and accessories. Where labor only was charged, the jobs were unprofitable.

In many instances, we have found that dealers were losing money on labor-hour cost and absorbing these losses through the profit made on parts and accessories, which is bad business. You should make a profit on labor and the merchandise sold with it. Adding the overall cost to parts or accessories only, is seldom profitable in the long run. From the foregoing, it is apparent that if your flat rates were figured unprofitably in the past, particularly during March, you will be in a bad way before the price control law is off the books.

Let's assume that you charged a flat rate of $40 for a refrigerator reconditioning job in March and that the base-period profit and loss statement compiled for that month showed 35% overhead, then the dollar value of overhead chargeable to that job was obviously $14 (35% of $40). Now, let's assume that your overhead totals $8 daily at this time for the refrigerator repair department. If it takes a service man two days to do the work, you have an outlay of $16 but only $14 allocated in the March price to which you must adhere, so you are short $2 on overhead. Every nickel counts today and you can't afford to let such discrepancies continue. Costs are tricky things, bad enough to watch under normal conditions and under price ceilings, super-slippery.

What You Might Do About It

We suggest that you analyze costs in accordance with the labor formula given here, computing the number of labor hours your service men work and adding to each hour the pro-rata share of overhead. Check this labor hour cost against the flat rates you charge now. If the check-over discloses that you must freeze one or more service prices at a loss, you have three ways out. You can:

(1) Cut your overhead expense under the March total, the actual dollar expense, we mean, not the percentage used in computing selling prices on service,

(2) Cut your labor cost by better supervision or improved equipment, if you can get it, or

(3) Increase service volume to reduce the overhead expense to sales.

In the past, many dealers could make good for losses on labor by raising prices or by selling more long-margin merchandise, but prices can't be raised now or pricing methods changed and sales of appliances, parts, and accessories are restricted by the ability to get supplies. Therefore, you must keep a close eye on costs and cut them, if necessary, to stay in business.

Conservation Branch Shifts Organization; Directors Appointed

WASHINGTON, D. C. — Changes in the organization of the Conservation Division whereby the Salvage Branch, consisting of the General Salvage Section, the Industrial Salvage Section, the Scrap Processors Section, and the Special Projects Salvage Section, has been discontinued with each of these sections now becoming branches, were announced recently by Lessing J. Rosenwald, Director.

The General Salvage Branch, with R. K. White as chief, is responsible for salvage activities in the home and on the farm. Included in its activities is the collection of scrap metal of all sorts, rubber, rags, waste kitchen fats, silk stockings and tin cans.

The Industrial Salvage Branch, whose chief is Hamilton Wright, deals exclusively with the scrap collection program in industry, accelerating the flow of production scrap as well as dormant scrap.

The Scrap Processors Branch, of which Merrill Stubbs is chief, supervises the work of scrap dealers and automobile graveyards and encourages rapid turnover in inventories.

The Special Projects Salvage Branch of which J. Widman Bertch is chief, expedites the movement of scrap materials where salvage is impeded by financial and other obstacles.

★ ★ ★

Today you'll find Kerotest Valves and Fittings doing a swell job in War Refrigeration Equipment for

Army Camps

Army Ordnance

Army Hospitals

Army Combat Equipment

Merchant Marine

Naval Stores Stations

Naval Ordnance

Naval Hospitals

Naval Combat Equipment

Lend-Lease Equipment

Industrial Assembly

Industrial Production

Industrial Storage

Industrial Testing

Food Storage & Processing

★ ★ ★

Regardless of the Allocation and End Use of *Your* Air Conditioning and Refrigeration Equipment —You can *always* depend upon

KEROTEST

VALVES & FITTINGS

★

KEROTEST PRODUCTS include

★ Diaphragm Packless Valves
★ Shut-Off Valves
★ Compressor Valves
★ Pressure Relief Valves
★ Check Valves
★ Manifolds
★ Liquid Indicators
★ Driers and Strainers
★ Flare Fittings

KEROTEST

KEROTEST MANUFACTURING COMPANY

PITTSBURGH, PENNSYLVANIA

Pattern and Problems of Wartime Refrigeration Parts Distribution

Industry Would Benefit By An Improved Priority Setup, But 'More Repairs Not Replace' Is Likely

NEW YORK CITY—Climaxing a description of the red-tape maze now tangling up refrigeration parts jobbers of the country, Alex H. Holcombe, Jr., president of the National Refrigeration Supply Jobbers Assn. stated here recently, "Our difficulty, and it is a real one, is that we sell on a low rating and then cannot replace at all or only after weeks or months of pleading for the necessary higher ratings from WPB."

Mr. Holcombe presented his picture of today's problems in the supplying of refrigeration parts—along with a full account of increased services now being rendered by the refrigeration parts industry—in an address on "Refrigeration Parts Distribution in Wartime" given before the 38th annual meeting of the American Society of Refrigeration Engineers.

To explain what he called the industry's "real problem," the NRSJA president declared that with shipments from all factories getting slower and slower even with higher ratings, the jobber is nevertheless called on to supply not only the A-3 and A-8 ratings of the Emergency Service Agencies, but to have at all times materials to furnish on A-1-k up to AA-1 orders.

"These high ratings indicate the material is needed for our gigantic wartime construction program," he pointed out.

Since December, 1941, many hundreds of new uses have been found for refrigeration as a tool of industry, he further asserted, explaining that all of these applications meant more equipment to be kept in continuous operation.

Necessity of Refrigeration In Modern Production

"Modern production schedules depend on refrigeration, and a shutdown for even a short time means the loss of critical man hours and materials," he added.

Mr. Holcombe stated that this need for refrigeration may not always be apparent to the layman since refrigerating machinery has always been hidden from the public.

"This is probably the reason why some of our government agencies who now control raw material and manpower are not aware of the necessity for refrigeration, as evidenced by the wording of P-22 and P-100 repair orders," he said.

Mr. Holcombe's report included uses of refrigeration in the war program as well as for health maintenance and explained the part a jobber plays in the entire refrigeration picture.

While his remarks somewhat censured the intricate priorities set-up under which jobbers work as greatly responsible for his industry's problems, Mr. Holcombe admitted that violation by service agencies of Order P-126 was also responsible for a depletion of stock of finished parts and materials used for maintenance and repair of equipment now in operation.

"This depletion is now causing hardships which are going to be difficult to rectify," he warned.

WPB officials in the Refrigeration and Air Conditioning section have stressed over and over again, Mr. Holcombe pointed out, that P-126 order has been abused in that ratings have been assigned to larger quantities of material than rightfully could be ordered. Although it is granted that the wording of the order may not be perfectly clear to the average Emergency Service Agency, he revealed that pleading ignorance of the meaning of the Order was not going to be considered a satisfactory excuse.

"We are all expected to seek legal or other advice on the correct interpretation of orders issued in Washington affecting our business," the jobbers' president maintained.

According to Mr. Holcombe, other questions have been raised through misunderstood orders. One concerns an interpretation advising that a complete high-side or condensing unit, or a low-side or coil cannot be installed by the use of an A-3, A-8 or A-10 rating. Perhaps some of this confusion would be avoided, he suggested, if the jobber, the manufacturer or both would insist on the serial number of the PD-1A application from which the rating had been assigned for any particular piece of equipment.

Another source of misunderstanding mentioned by the speaker was in connection with the sale of copper tubing. Here he explained that priorities regulation No. 1 states that material in stock must be sold to fill an order whether AA or A-10. However, he emphasized, the M-9-A Preference Order, paragraph C (2), as amended Aug. 1, 1941, restricts the sale of copper tubing to orders bearing ratings of A-1-k or better.

Present Priorities Are Not Good Enough

At the same time, he advised of indications that copper tubing sold even on ratings from A-1-b to A-1-k cannot be replaced as mills are working entirely on AA-5 or better orders.

Still another difficulty named by Mr. Holcombe dealt with hard solder, also known as 95/5 solder.

"Many of the jobbers have sold their stocks on high ratings such as AA-3 but were unable to replace this material since the end use was not lower than 7.00, which covers construction of war facilities," he explained. "The manufacture of hard solder is definitely restricted to the construction of implements of warfare, end use 1.00 to 6.00 on the End Use Allocation Classification System," Mr. Holcombe added.

Throughout the summary of priorities developments given by the NRSJA head ran a note of blame for the tardiness of provisions for repair of the great bulk of existing refrigeration—domestic and commercial installations.

On May 15, 1942, Order L-38 stopped the sale, installation or manufacture of much refrigeration equipment including high and low sides, Mr. Holcombe said. He pointed out that one of the provisions of this ruling forbade the installation of a new condensing unit without a rating of A-9 or better, and not even then without special permission of the War Production Board, which by that time had superseded OPM.

"This permission is given on a PD 1-A form for each individual installation," he explained, going on to say, "These forms must be filled out even in the case of a drug manufacturer to expand his facilities to process blood plasma, or to replace older equipment which he cannot trust to perform satisfactorily."

He named as the only exceptions to this ruling the Army or Navy of the United States, the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, the National Advisory Commission for Aeronautics, the Office of Scientific Research and Development, or any foreign country pursuant to the Lend Lease Act.

Shortly after L-38 came the L-63 order limiting stocks and re-ordering by the jobber, continued Mr. Holcombe.

"We are given forms PD 1-X to seek ratings on items we sell that do not have ratings assigned by our customers, such as household refrigerator parts," he told the meeting. "This is also to replace items sold under one rating," he said, "when that rating is not high enough to enable the manufacturer of parts and supplies to get raw materials."

Here's a Typical Supply Problem

He gave this example of the problem:

"We sell tools and get an A-10 from the service agency. We assemble a number of these items all rated on an order to the tool manufacturer. He is already loaded up with orders from other jobbers, government agencies, defense plants, lend-lease, and others rated A-1-a to A-1-k, and taking all of his facilities for months to come.

"We apply . . . stating the need and asking for a higher rating than A-10," the explanation continues. "Unless we get better than A-1-k we are no better off," it adds.

"A jobber cannot originate any rating at all and is dependent on his customers," said the speaker. "Perhaps that explains why he favors those customers that give him the higher ratings when they are available."

Mr. Holcombe admitted that under Priorities Regulation No. 1 a jobber should honor any rating served on him for reasonable quantities of material on his shelves.

On April 20, 1942, Order P-126 was issued to provide the assignment of ratings for commercial installation parts by Emergency Service Agencies. The basis of this order, Mr. Holcombe stated, was that applications for licenses would be submitted by condensing unit manufacturers, coil manufacturers, or owners or lessees of refrigerating equipment, the last group to provide for chain stores, ice cream manufacturers, supermarkets, or others who had their own service organizations to look after their own equipment only.

"It was felt that the condensing unit and coil manufacturers would send in names enough to service properly most of the equipment already in service," Mr. Holcombe pointed out.

10,000 Agencies Licensed Under P-126 Setup

Explaining that the great quantity of names submitted caused considerable delay in the program, he revealed that approximately 10,000 agencies have now been furnished with a license authorizing them to assign ratings in the purchase of their supplies.

"These ratings are A-1-a for certain limited vital applications and A-3 or A-8 for general refrigeration repairs," he revealed.

These last two ratings have not been high enough so far to enable the jobber to replace many items which he has sold on them, Mr. Holcombe asserted, probably because the manufacturer is unable to secure sufficient raw material to fill these orders, or because his plant facilities are already taken up entirely with much higher rated orders.

"The volume of business received by the parts manufacturers for war agencies alone is probably greater than the normal output for all purposes," he declared.

In keeping with this claim, Mr. Holcombe outlined the many war uses of refrigeration.

"For almost a year prior to December, 1941, we were preparing for war emergency distribution," he said, "furnishing material to contractors installing equipment in the many Army camps as well as to the shipbuilding and industrial building programs.

Jobbers have furnished much equipment to the camps, he said; it is used in hospitals, water coolers, kitchen refrigerators of all sizes, as well as large refrigerated cold storage facilities.

Mr. Holcombe explained that many of these installations were put in by larger compressor builders who do not manufacture expansion valves, solenoid valves, and certain other parts which can be purchased from the jobbers. In smaller installations, he explained, occasionally the jobber furnished the condensing unit, the low-side evaporator, and all the connections to a local electrical contractor who made the installation.

"In this case," he revealed, "it was necessary for the jobber to interpret the specifications and furnish material acceptable to the government authorities."

The speaker also said that much

(Concluded on Page 15, Column 1)

ARMY E NAVY

BRUNNER

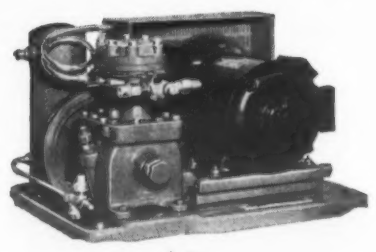
COMMERCIAL REFRIGERATION

Commercial Refrigeration equipment by Brunner has long been accepted by the refrigeration industry the world around as the *dependable* top-quality line.

Low-cost, trouble-free performance in many countries has made "Brunner" a *buy-word* whenever and wherever installations are planned with an eye to long-term, economical operation.

Brunner dependability is based on time-proven features of design and manufacture . . . all parts are precision machined with extremely close tolerances . . . bronze bearings throughout . . . extra large fin surface on cylinders and heads . . . bellows seal . . . silent eccentric drive (except on 20 h. p. and 25 h. p. models, which employ crankshaft) . . . suction and discharge valves in "all-in-one" plate assembly . . . heavy-duty motor with high starting torque . . . adjustable motor base . . . multiple V-belt drive. Throughout, Brunner Refrigeration Units are geared to the demands of *heavy-duty* service.

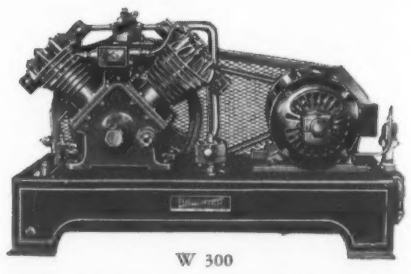
The Brunner line provides models from 1/5 to 25 h. p. for every type of low-temperature applications. Either Methyl Chloride or "Freon-12" may be specified, in accordance with your needs.



A 38

AIR COOLED CONDENSING UNITS

Model		Evaporating Temp. ° F.	B.T.U. Per Hr.	Comp. R.P.M.
A 18	L. T.	0	1,422	425
	M. T.	25	2,286	375
A 38	L. T.	0	1,913	570
	M. T.	25	2,870	475
A 50	L. T.	0	3,650	415
	M. T.	25	5,550	525
	H. T.	50	6,200	415
A 75	L. T.	0	6,650	480
	M. T.	25	9,500	560
	H. T.	50	11,100	460
A 100	L. T.	0	8,100	570
	M. T.	25	11,200	500
	H. T.	50	13,100	365
A 150	L. T.	0	10,900	365
	M. T.	25	14,850	280
	H. T.	50	15,750	435
A 200	L. T.	0	14,700	490
	M. T.	25	18,500	380
	H. T.	50	21,600	275



W 300

WATER COOLED CONDENSING UNITS

Model		Evaporating Temp. ° F.	B.T.U. Per Hr.	Comp. R.P.M.
W 300	L. T.	0	241,143	390
	M. T.	25	33,358	300
	H. T.	50	46,135	260
W 500	L. T.	0	36,525	590
	M. T.	25	53,374	480
	H. T.	50	74,526	420
W 750	L. T.	0	66,146	450
	M. T.	25	84,486	320
	H. T.	50	109,540	260
W 1000	L. T.	0	79,376	540
	M. T.	25	110,889	420
	H. T.	50	147,460	350
W 1500	M. T.	30	101,582	350
	H. T.	50	147,460	350
W 15000	L. T.	0	103,110	390
	M. T.	25	172,986	390
W 20000	L. T.	0	136,250	520
	M. T.	25	228,431	520
	H. T.	50	305,242	435
W 25000	H. T.	50	378,972	540

THE BRUNNER FIELD SALES ORGANIZATION operates in all sections of the country. Brunner's preeminent achievements in engineering, modern manufacturing methods and design of air conditioning and refrigerant equipment is your assurance of guaranteed performance. The best materials and finest craftsmanship are blended to maintain the enviable reputation earned through 35 years of experience by the name of "Brunner."

FREE . . . . COMPLETE ILLUSTRATED CATALOG with large section devoted to ways of selecting the proper units for any application.

BRUNNER MANUFACTURING COMPANY, UTICA, N. Y., U. S. A.

When the loads are tough

Filtrine COOLERS

for Dependable Service

Wherever cooled water is needed —aboard ship, in war plants, mess halls, cafeterias, bakeries, for photo developing—there is a Filtrine Cooler designed specifically for the job. Filtrine Coolers can handle average and peak loads dependably; all have large storage capacities. Filtrine installations in an ever-increasing number of Army, Navy and Marine Corp bases is proof of their efficiency.

Write today for a complete file of Filtrine literature, and take a step toward getting YOUR share of the cooler and filter business.

Filtrine MANUFACTURING COMPANY 53 Lexington Ave., Brooklyn, N.Y.

A Part-by-Part Analysis of the Refrigeration Repair Supply Situation

(Concluded from Page 14, Column 5)

equipment had been furnished to the shipbuilding program by jobbers, with similar items going to industrial and chemical plants, research and drug laboratories and many other types of businesses now using refrigeration. He further explained that after a plant has been put in operation its own maintenance men had to have a local source of refrigeration supplies.

"They cannot wait for a factory man to make minor adjustments and to repair breakdowns which occur without warning," he pointed out.

Naming various sources of equipment, he asserted that only an independent wholesale jobber has access to the facilities of these many points. Telephone calls and telegrams for the correct items, plus motor freight, parcel post or even air express get the needed parts quickly, Mr. Holcombe added.

Problems Are Piled on Top of Problems

Among the many new uses for refrigeration requiring service of the jobber, Mr. Holcombe included the continuous pick-up orders being received from industrial companies, laboratories, Army camps, shipbuilding companies, Navy yards, and similar organizations, all carrying very high priorities that must be served from the jobber's stock or secured promptly from the manufacturer. Since the purchaser often does not know just what he wants or what substitutes he can use, the speaker intimated that considerable skill is required in filling these orders.

Probably the most complicated example would be in filling an order for copper or copper alloy products, he wagered, explaining:

"After the sale is written up the items must be listed on a separate priority list with the rating, the invoice number, the end use, and the government contract number or the name of the ultimate user where the installation is made if the contract number is not available."

Mr. Holcombe further pointed out that war conditions have led to increased telephone and counter calls while delays in transportation have augmented telephone, telegraph, and stenographic expenses.

"Partial shipments add to this complication," he said, "involving valuable time on the part of those who could be employed to a greater advantage were they able to handle one shipment rather than several for any given order.

NRSJA's chief suggested that manufacturers could be of considerable help if they would furnish just a little more information as to what can or cannot be furnished as required, send prompter acknowledgments, and mail a copy of the packing list with name of the carrier the day the order leaves the factory.

Few Provisions Made for Household Unit Repair

Concerning maintenance of household refrigerators, Mr. Holcombe stated that "very little provision has been made for repair parts" in this field. For example, he said that only one manufacturer is still building new controls and at the present time an A-1-k or better rating is required to secure them in 30 to 60 days. Naturally, the speaker added, this rating is not available for these domestic controls except from WPB.

"Probably the next most important item for repair of household refrigerators is the expansion valve," he said; "in general two types are used."

"The one is made of capillary tubing, which is very scarce and probably will not be available in copper, although steel will not work out satisfactorily," Mr. Holcombe explained. He further pointed out that refrigerators using capillaries could not be well adapted to the other type of control.

Another item named by the speaker as quite essential to the repair of small refrigerating machines was the replacement seal, with the rotary seal considered most successful. Mr. Holcombe told how Rotary Seal Co. ceased production for several months until a coast to coast survey of the shelf stocks of over 125 jobbers indicated that out of 100,000 seals on hand the ratio of commercial to domestic seals was three to two.

"With this information," declared Mr. Holcombe, "WPB issued sufficiently high ratings to the manufacturer to go out in the market for the necessary raw material. Again there was considerable delay," he added, "because of the difficulty of locating steel even with an AA-1."

Turning to repair items for commercial equipment, the jobber's president divided parts into two classes: items which have not required any priority at all up to the present time and those requiring ratings.

In the first class he placed refrigerants, belts, and oils. Under this grouping, he explained that demands for Freon-12 refrigerant have been increasing, but that provision had been made to meet this demand at all times except for one period in the summer of 1941. He pointed out, however, that many jobbers do not care to handle Freon-12 because of the low percentage of profit on factory-filled cylinders.

In discussing refrigerants, the speaker warned that lack of cylinders may prove serious in time to come "because of the increased demand for all refrigerants whereas new cylinders are difficult if not impossible to secure."

Mr. Holcombe admitted that provision also had been made for proper distribution of belts, but declared that there was room for considerable standardization in the production of these items.

Switching to parts requiring ratings, he cited flow control valves as the most widely used articles in this class. Manufacturers advise, however, that there is for a little time a sufficient available supply of expansion type valves that are not needed for defense purposes, he said.

Mr. Holcombe named several other parts which are more difficult to secure. These include the copper capillary tubing which transmits pressure from the temperature bulb to the valve itself. Substitutes have been tried in the way of steel tubing, he said, but so far they have not proved satisfactory.

"Secondly," continued the speaker, "inside the valve are parts made of stainless steel which has been restricted for some time.

"It is difficult for us in the distribution field," he added, "to understand why one manufacturer can make and ship valves on an A-8 or A-10 rating where another similar manufacturer for the same type of valve requires an A-1-k or better. It would seem," he asserted, "as though the restrictions placed on one should apply to all."

He also expressed his belief that much standardization could take place in the valve field.

Mr. Holcombe further explained difficulties in getting solenoid valves, construction of which calls for a fine copper wire magnetic coil. Facilities that make this wire have been in such demand that for the past several months replacement magnetic coils have not been available without an A-1-a rating or better, the association leader stated.

Concluding his account of the commercial parts field, he predicted:

1. "Temperature and pressure controls can generally be repaired." A-3 to A-10 will secure repair of these by most manufacturers, he pointed out, adding however that some producers were requiring higher ratings.

2. "Compressor and compressor parts are increasingly difficult to secure." The speaker remarked here that "There is an opportunity for the Emergency Service Agencies to repair rather than replace many parts in the future."

3. "Coil and unit coolers will have to be repaired instead of being replaced." In developing this point, he maintained that the manufacturers of coils and unit coolers are unable to furnish orders bearing ratings lower than A-1-k without considerable delay. Moreover, he stated that it is essential that those in stock be conserved for war orders and other emergencies.

As a background for his remarks about "Refrigeration Parts Distribution in Wartime," Mr. Holcombe revealed that the wholesale refrigeration supply business started as a result of the 1929 stock market crash and depression years which followed.

"Today there are approximately 200 independent jobbers scattered throughout the United States and Canada," he estimated, placing most of them in the greater industrial areas such as the east coast, from Pittsburgh to St. Louis and Chicago, and the west coast.

"In the larger cities jobbers carry as many as 10,000 different parts or items in stock in normal times," he continued. "These vary from gaskets selling for one-half cent each to large blower coils and condensing units worth $100 or more each," he further told the group.

"Whether in peace or in war we serve our country by helping in the distribution of items needed for emergencies as well as in the prompt completion of various sizes of refrigeration contracts," he declared.

Mr. Holcombe approximated that there are more than 20,000,000 household refrigerating units and 5,000,000 commercial units 10 hp. and under in continual operation throughout the country.

In outlining the work of the jobber in maintenance of these machines, he said, "A machine breaks down or will not produce proper temperatures. A service agency is called in and immediately there is a demand for some of the products we distribute. If the service agency does not have the material required, they make some effort to get the machine into temporary operation and come to us for help."

The experience which the refrigeration supply jobber has gained in the past eight to 10 years will be extremely valuable in the months to come, predicted the association's president.

PURO ELECTRIC WATER COOLERS

Different models available for the various requirements of government agencies and war production plants.

PURO FILTER CORP.
440 Lafayette St., New York

DRINKING WATER SPECIALISTS FOR 40 YEARS.

FOR EVERY REFRIGERATION JOB

Choose Penn Controls!

In 1943 Refrigeration faces the biggest job it has ever been called upon to perform . . . it must preserve and protect our food supply.

Food is a weapon of war . . . a vital necessity for both civilians and our armed forces. To prohibit waste and spoilage, to keep foods fresh, wholesome, healthful, existing refrigeration equipment must continue to function efficiently.

The accuracy and dependability of Penn refrigeration controls will help you do this job efficiently. Choose from Penn's complete line of pressure and temperature controls in both single and double pole, with or without calibrated adjustments for single phase or polyphase service. Penn Avrgaire for "above freezing" jobs—to mention only one of these controls—maintains temperatures within 1 degree without erratic short cycling . . . provides selective defrost . . . and accurate humidity control.

Under established priority rules Penn can supply controls for every refrigeration need—for new equipment or to replace old controls which cannot be made to function efficiently. *Penn Electric Switch Co., Goshen, Indiana.*

PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

'Pre-Fabricated' Cooling Systems Preserve Cargoes of Bacon

Unusual Control Devices Installed To Afford Fast Defrosting and to Protect Equipment From Sea Water

OTTAWA, Canada — Emergency refrigeration for shipping Canadian bacon over the North Atlantic route has been described in a paper written by W. H. Cook and T. A. Steeves of the National Research Laboratories here.

Calling the achievement "useful rather than spectacular," the authors believe that the system might be applicable for shipping other foods, especially in dehydrated forms, and for feeding armies in tropical climates.

Their paper, entitled "Wartime Refrigeration of Foods for Transport at Sea," was presented in New York City on Dec. 2 at the 38th annual meeting of the American Society of Refrigeration Engineers.

The emergency system described by them was planned to maintain only "comparatively small temperature differences, i.e. 20 to 30° F." It consists of prefabricated refrigeration units designed to save cargo space and to allow quick installation to avoid delaying the ship's schedule.

"Bacon is one of Canada's principal perishable exports," they explain in opening paragraphs of the system's story. "It is ordinarily shipped to Britain in refrigerated space at temperatures of 30° to 35° F."

They point out that during the last war it had to be shipped in ordinary (unrefrigerated) stowage, and to prevent spoilage was packed in boxes with a mixture of salt and borax.

"This embalmed meat may have been nourishing, but it was not a desirable product," declare the writers.

Other Means Tried

With a shortage of refrigerated shipping space anticipated for this war, attention, they say, was turned to other means of preservation before the emergency refrigeration system was finally adopted. While developments in curing, smoking, and preserving proved to be either ineffective, unhealthful, or harmful to quality of the bacon, state the authors, these experiments did bring out the fact that with scrupulous care in processing, bacon entering immediate consumption could be carried for 30 days at a temperature of 45° F.

Eliminating preservatives as the solution, those in charge of the problem next considered various methods of keeping the cargo at reduced temperatures, already proved effective by current practice, declares the paper.

"Since mechanical equipment and insulation are both in short supply," argue Mr. Cook and Mr. Steeves, and "Considerable time is also required for the installation of equipment of a permanent type even if suitable space could be found on vessels," an alternative mechanical installation had to be found to meet those limitations.

To explain the refrigeration job required of the mechanical installation, the writers state, "Canadian bacon arrives at seaboard at temperatures averaging 35° F. or lower. At least 75% is in the form of baled, unsmoked, Wiltshire sides, the remainder as cuts in 600-lb. boxes.

"The product," they continue, "is transferred without delay from the railway car to the ship's refrigerated chambers . . . usually on the 'tween decks" (and not always available at present).

According to the paper, these chambers are generally cooled by pipes, cool air, or both, and air circulation is allowed by using dunnage (mats and strips of wood) beneath —and usually scattered throughout —the cargo.

Circulation a Factor

Such circulation is ineffective with baled bacon cargoes, however, the writers say, because:

1. The product settles and closes this space.

2. Circulation through the cargo is unnecessary since bacon arrives at carrying temperature and generates little or no heat in transit.

Reaching the crux of the problem, they write "Under these conditions the heat gain through the sides, bulkheads (end partitions of the hold), and decks constitutes the refrigerating load."

Although this heat gain may seem small, they point out that any attempt to adequately insulate against it would delay the ship's schedule too greatly. With insulation ruled out as an exclusive means of maintaining the low temperature of bacon at stowage, positive refrigeration was the only answer left, concludes the paper.

First step given in providing the required mechanical installation is selecting a hold where the heat gain will be minimal and then determining how much refrigeration will be needed.

"A hold having a low surface-volume ratio, removed from hot engine-room bulkheads, is obviously desirable," the writers declare, adding that "lower holds most nearly meet the first requirement."

The second hold in the forward end (front) of the ship is best, especially in vessels with a coal bunker or another hatch between it and the engine room bulkhead, claim the authors. No. 1, the first in the forward end, they reject as too angular and therefore as having a less favorable surface-volume ratio, while holds in the after end (back) are cut by the high-temperature screw tunnel.

Sea Water Temperature

Contrary to expectations that air in lower holds—below the water line when the vessel is loaded to capacity —would attain sea water temperature, the paper reveals that the temperature of cargoes that do not generate heat is largely determined by their temperature at stowage. "Cargo stowed at low temperature generally discharged at temperatures below that of the ocean, and vice versa," reads the paper. Furthermore it states that "Ocean temperature records indicated that 60° F. was about the maximum encountered in the North Atlantic at any season."

Using this information as a basis, Mr. Cook and Mr. Steeves conclude that with a variation of 30° F. between the water temperature and bacon stowage temperature, "bacon stowed and carried at 35° F. would require the maintenance of a 30° F. temperature gradient."

Since bacon entering into consumption immediately can be processed to carry for 30 days at 45° F., a minimum temperature difference of 20° F. is established, the explanation continues.

"The heat required to warm the bacon from 35° F. at stowage to 45° F. at discharge provides reserve capacity to take care of the greater temperature gradient prevailing in port where water temperatures are generally higher.

"Taking a K value of 2 for the sides and bulkheads and 1 for the tank-top and deckhead, somewhat over a ton of refrigeration is required for each degree of temperature difference," they estimate.

Although the erection of rigid insulation would delay the vessel, it is told that insulating blankets can be erected on the sides and bulkheads to reduce heat transivity in these areas to about 0.5 B.t.u. per hour per °F. per sq. ft. "Using this K value for the areas and 1 for the untreated tank-top and deckhead, the refrigerating load is about 12 tons for the maintenance of the minimum temperature difference of 20% F."

Why It Was Selected

From this estimate of capacity requirements, various procedures for maintaining the required temperature during an assumed 20-day voyage could be considered. Water ice, needed in 240-ton amounts, and dry ice, needed in 125-ton amounts, were rejected because of bulk, and problems of water disposal, stowage, and cargo shifting. Pre-stowage freezing of the cargo and stowing the space with a lining of an insulating product such as lard is impractical in Canada where they lack freezer capacity and do not export much insulating substances like the lard.

"For these reasons," continue the authors, "attention was given to the use of mechanical equipment to meet these emergency requirements." These requirements are listed as:

1. Those dictated by recognized marine practice.

2. Special needs arising out of the emergency, primely, installing the equipment without delaying the ship's schedule.

Prefabricated refrigeration units to be installed in the cargo hold seemed to be the answer, declare the writers. Furthermore, because precautions against fire, refrigerant, or water hazards can be relaxed only when real danger is avoided, the installation presupposed:

1. Use of electric motors for motive power.

2. Use of a safe refrigerant.

3. Enclosing all equipment in metal to reduce fire risk and damage by cargo.

4. Providing a water-tight bottom and drainage to avoid water damage.

5. Providing simple instruments for indicating operating condition of the equipment to be placed in engine room or other accessible place.

In connection with use of electric motors, the paper states that approximately 30 kw. were required to provide the net refrigeration duty. Although auxiliary equipment may be required to produce this power on many vessels, in general motor ships provided with electric winches can meet these requirements while at sea, the writers claim, adding that "Water cooled condensers are necessary for an application of this sort, but in general the 1,500 Imperial gallon required per hour can be supplied by either the general circulating or sanitary service pump."

Mr. Cook and Mr. Steeves continue to explain that the need for maximum refrigeration capacity with minimum size and weight calls for a high speed compressor and an extended surface evaporator. "Equipment having a gross capacity of 90,000 to 100,000 B.t.u. is about the best that can be done within these weight limitations," they point out. "This means that two or more such units are required for an average cargo hold [with] the added advantage of assurance against complete failure through mechanical breakdown."

Evaporator and Blower

One of the first units installed aboard ship under average operating conditions had a gross capacity of 90,000 B.t.u. per hour at 750 r.p.m., according to the authors.

"The evaporator was of the extended surface type, having 10.2 sq. ft. of face area, and coils eight rows deep in the initial applications. The insulated enclosure acted as a plenum chamber and the double-width, double-entry fan pulled air in through the evaporator and discharged it at the same end of the enclosure. The fan capacity was about 6500 c.f.m. at static pressures approaching 2 in. as experienced in practice.

"While the fan was ordinarily in continuous operation, the compressor motor had to be stopped periodically to defrost the coil. As the current on most vessels is D. C., an automatic starter for the compressor motor was provided within the unit."

Depending on conditions, the compressor motor may be stopped up to 25% of the time for defrosting in this type installation, it is reported.

Most of the heat was removed by the water-cooled condenser, although that from the compressor head and motor, and that generated by the fan motor were removed by the air stream, continues the description.

"The net refrigeration effect is on the average about 60,000 to 65,000 B.t.u. per hour per unit," estimates the paper.

Primary Control

For this initial installation, the control and indicating equipment was installed in the engine room and consisted of a single ammeter mounted in the circuit for each unit, and protection fusing for each circuit, reveal the authors.

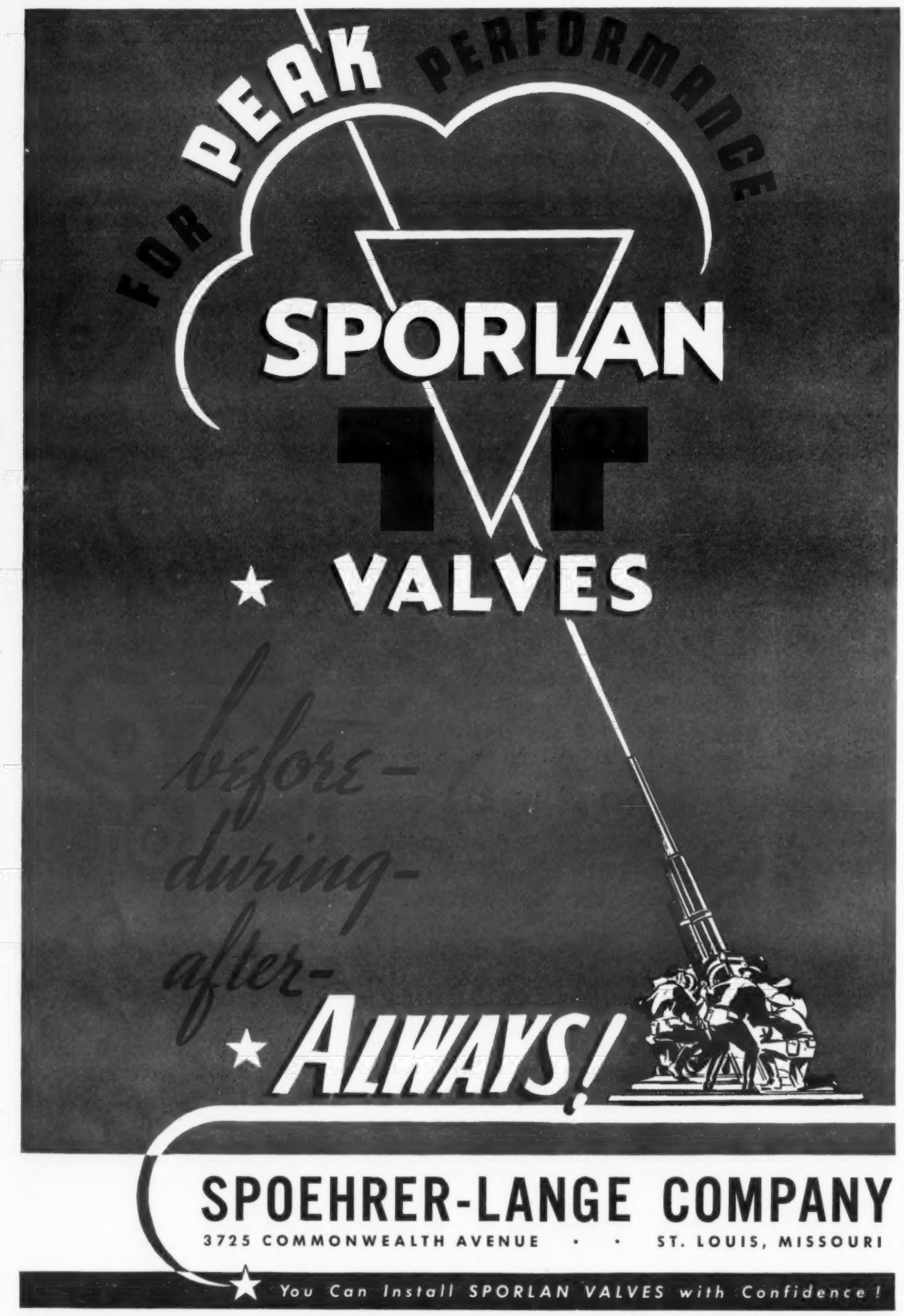
Stating that "actually almost every type of failure can be detected with this single arrangement by an experienced operator," they explain that amperages below a given value usually indicated a frost-coated coil while amperage less than normal on starting up indicated a broken compressor or fan belt.

Also part of this indicating equipment, water from condenser discharged through a storm valve on the ship's sides where it could be watched.

Typical procedure for installing units on the ships follow:

When the vessel arrives in port, the units are placed aboard and welded in place on the 'tween deck next to the hatch. Electrical connections are made with the engine room, water connections are made between suitable lines and the condensers, and

(Concluded on Page 17, Column 1)



Procedure For the Installation of Bacon Storage Units In a Cargo Ship

(Concluded from Page 16, Column 5)

drainage lines are installed between the drip pans and the bilge.

Temporary insulation used on sides and bulkhead has to permit "rapid erection, readily removed to avoid injury by other cargo on return voyages, not subject to serious deterioration by sea water or high humidities, slow burning, and relatively inexpensive. Eel grass batts ½ in. to ¾ in. thick, stitched between two layers of 8-oz. duck in the form of large blankets (about 20 ft. by 30 ft.) provided with ropes for tying in place were found to be satisfactory," the paper states. Hair felt blankets have also been used but are more costly, it points out.

The authors maintain that most of these jobs can be completed in from two to three days while stowage proceeds through other hatches. Electrical connections, which require the most time, could use some advance preparatory work, they say.

Capacity Figures

They point out that from the period of actual operation of the units and the estimated neat pick-ups from the motors and compressor, the net refrigeration would appear to be about 174,000 B.t.u. per hour, equal to a net capacity of 58,000 B.t.u. per hour for each unit. Despite obvious limitations as to accuracy, the average K value over all surfaces was about 0.85 B.t.u. per hour per °F. per sq. ft., they conclude.

The wide divergence between the gross capacity of about 90,000 B.t.u. and the net capacity of 58,000 B.t.u., reads the paper, was due largely to stopping the compressor for defrosting the coil.

The original plan, it is explained, was to have each compressor stopped for about an hour whenever the ammeter reading fell below a given value. Since such a plan would demand the constant attention from a crew member, however, a more practical schedule was followed, shutting all units simultaneously for a one-hour period following five-hour operation. "This alone reduced the net capacity to 83% of the gross capacity," the writers say.

The schedule, based on port observations, proved unsatisfactory. Three other methods of defrosting were tried, with some effect, however, before the successful solution was reached: use of more streamlined air return, automatic defrosting through the low pressure switch, and change in coil design.

In the automatic defrosting, use of a large differential setting largely eliminated the thermostatic feature of such a device. Although this method kept the coil in a satisfactory condition, in practice it decreased the operating time to 75% and even as low as 50% in cold weather, says the paper.

Some improvement in performance was made too by using a 6-row instead of an 8-row coil, increasing the face area from 10.2 to 14.4 sq. ft., the paper reports. Higher increases were ruled out, it continues, as increasing the size and weight of the units to impractical proportions; even a substantial increase in fin spacing increased the size to an objectionable extent.

"In the new units the fan capacity was increased from 6,500 to 12,000 c.f.m. at 1.5-in. static pressure," it adds.

Defrosting Hookup

Finally rapid methods of defrosting were considered, with electrical heating elements appearing to be most practical, say Mr. Cook and Mr. Stevens. Two methods were considered:

1. The addition of extra tubes parallel to the refrigerant tubes and expanded into the fins but open at both ends to permit the insertion of hairpin heating elements;

2. The replacement of a certain number of fins with heavy gage copper plate to which the heating elements were securely bonded.

The second method was chosen because it was more effective, simpler to manufacture, and did not increase the coil size appreciably, state the authors.

Explaining how in practice the defrosting system was made automatic, they write that a frosted coil results in low pressure which activates the low pressure switch, stopping the compressor and fan, and closing the heater switch. When the coil is defrosted, the switch cuts off the heater and starts the fan immediately, drawing any residual water out of the coil. Some 30 seconds later, the compressor motor starts through a delayed action relay, continues the explanation.

"Tentative results indicate that defrosting can be accomplished by this procedure with less than an 8% loss in operating time," the writers declare.

"Air temperatures," they continue, "of about 35° F. were the lowest attainable with the earlier form of the equipment regardless of the capacity provided. Temperatures about 10° F. lower have been attained with the newer type of coil and this phase is still under investigation."

The low pressure switch also solved the problem of condensers, which in the emergency systems were made of brass and could scarcely be considered a full marine type product. "Corrosion, erosion from the silt-carrying water in port, and the probable introduction of mercury from certain anti-fouling paints are all likely to limit the life of light gage brass condenser tubes," it is pointed out.

Stopping Sea Water

Since the failure of a tube would result in the destruction of the compressor and evaporator by introduction of sea water, some protection was needed declare the writers.

"This was done," they say, "by installing a low pressure switch on the high side to switch off the compressor motor should the refrigerant pressure in the shell fall to a level only slightly above the water pressure in the condenser tubes. While this prevents sea water from being circulated by the compressor, it does not prevent serious damage over an extended voyage."

Therefore the authors reveal that whenever equipment was accessible, a warning gong was activated in the engine room by this protective switch.

Drawing from recent experiences, the writers declare that limited applications have now been made on holds besides No. 2. Other up-to-date improvements they list as

1. Cutting the deck to avoid blocking any part of the hatch area with the ducts, and installing the duct next to the fore or aft bulkhead.

2. Building in the fore and aft channel along the length of the centerline bulkheads, with a portable section in the hatch area. This delays the ship a day or two, but eliminates need for close supervision of subsequent stowage.

3. In frozen cargo tests, using a coil fitted for electrical defrost has provided sufficient capacity to maintain and provide temperatures of about 25° F. under average conditions.

"In this case, blanket insulation and dunnage was similar to that previously described except that the deckhead was also lined with blankets held in place on timbers supported on the beams.

"To prevent rapid thawing of the exposed cargo by the moving of the air stream, should the air rise above freezing temperatures, another layer of similar blankets was placed on the sides and above the cargo inside the vertical dunnage. The air was passed through the dunnage between the two layers of blankets jacketing the entire cargo.

"This application is still in the experimental stage too."

Concluding their paper with a word about the use of the system for shipping dehydrated foods, they point out, "Dehydrated foods . . . conserve shipping space but they are still a more perishable product than most people realize. Certain dehydrated products soon pass beyond the realm of edibility at temperatures of about 90° F. or higher, but can be kept for relatively extended periods at 70° F.

In the future means may be found for preventing this high temperature deterioration, they admit, but suggest that until this is accomplished the immediate solution would appear to be limited temperature control.

"The emergency equipment described above might find an application for the feeding of armies in tropical climates," they point out.

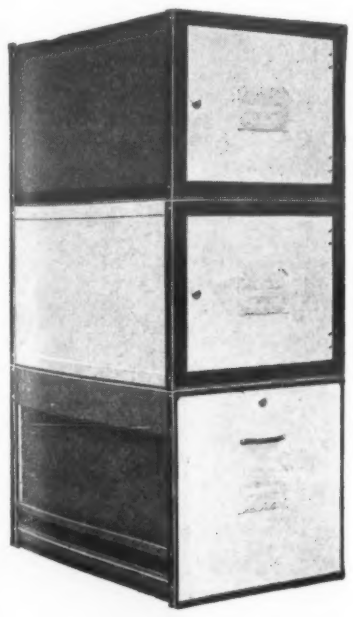
The Machine For Your Next Job...
If it's a refrigeration job ...no matter how big or how small...we can supply Lipman equipment to fit the specifications.
Let us work with you.
GENERAL REFRIGERATION DIVISION
Yates-American Machine Co.
Dept. AC-3, Beloit, Wis.
Model 153 Water-cooled Machine
Lipman

Food Vault Operators Expand NOW

In That Space You Have Available

There is no need for you to postpone that expansion in the available space in your Food Vault. Fill it up and take that waiting list "off the hook."

Our Victory Program requires the hearty cooperation of everyone and by utilizing that available space NOW, you and your patrons will do your "bit" by conserving foods and relieving transportation facilities. But be sure your expansion is made with the



MASTER Food CONSERVATOR

Which matches your present drawers and door fronts—does not absorb odors—is moisture resistant—clean—sanitary—sturdily constructed—easily stacked — shipped knockdown — easy to erect.

Order Today

It's not a bit too early to prepare for the coming fruit and vegetable crop. Better be safe than sorry.

Endorsed by and sold only through distributors of refrigeration and insulation.

MASTER MANUFACTURING CORP.
121 Main St. Sioux City, Iowa

Over 300,000 Master Food Conservators in Use

We Oldsters Must Raise Our Sights

There's a thrilling new world coming into being after this war is won. Our fighters won't be content with less.

Their intensive training is upgrading their thinking. Look, for example, at their mass expertness in the mechanics of transportation in the air, on the ground, on and under the sea. That's a far cry from the skill we oldsters display in the simple task of adjusting a spark plug. It is also a measure of their expectations.

Fortunately, our nation will emerge from this war well equipped to meet this challenge. Actual capacities for producing will be enormous. Here at Alcoa, we're making millions and millions of pounds of Aluminum per month on sites that were just pastureland a short time ago.

Fabricating procedures, too, are keeping pace with demands for military equipment. The world is a vast laboratory in which new processes are being proved. That goes for Alcoa Aluminum in greater measure, perhaps, than for any other war material. The advances in Aluminum techniques have been in keeping with the importance of Alcoa Aluminum to the war effort.

Yesterday's products will be out-of-date tomorrow. Yesterday's houses will seem old-fashioned. Yesterday's implements for living will seem clumsy and slow to men returning from the war.

The designers, the planners, the businessmen in *all* vocations who realize this cold fact are the men who will make things tick when peace is here. By edging in an eighth day of thinking on postwar products among their seven days of war work, they can begin to make this opportunity a reality. Imagineering, we call this dreaming of the future and then making it come true. Alcoa Aluminum has, inevitably, an important place in that postwar planning.

ALUMINUM COMPANY OF AMERICA, 1975 Gulf Building, Pittsburgh, Pennsylvania.

IMAGINEERING AT WORK

ALCOA ALUMINUM

Air Conditioning & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office;
Established 1926 and registered as
Electric Refrigeration News

F. M. COCKRELL, *Founder*

Published Every Monday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: $4.00 per year; 2 years for $7.00. All other foreign countries: $6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

GEORGE F. TAUBENECK,
Editor and Publisher

PHIL B. REDEKER, *Managing Editor*
Editorial Assistants: CAROLINE TUNSTALL, BARBARA BELCHER, and ELISE WHITE.

JOHN R. ADAMS, *Business Manager*
ELIZABETH SMITH, *Assistant Bus. Mgr.*
JAMES B. SMITH, *Advertising Manager*
MARGARET MARR, *Assistant Adv. Mgr.*
M. HELEN COCKRELL, *Credit Manager*
ELIZABETH K. JEHN, *Subscription Mgr.*

On leave of absence to serve our country
U. S. Army: RICHARD A. NEUMANN, JACK SWEET, GEORGE L. COLLINS, GEORGE M. HANNING, ALVIN E. HORNKE, HUGH T. MAHAR & HARVEY HARTWIG.
U. S. Navy: ROBERT P. NIXON, ED HENDERSON.
U. S. Marine Corps: PAUL R. PARK.
U. S. Army Air Forces: JIM MCCALLUM.

Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOLUME 37, No. 16, SERIAL No. 718
DECEMBER 21, 1942
Copyright, 1942, Business News Publishing Co.

Refrigeration Will Help
Win the War

Let's Bell the Cat

AS the most hectic, disorganized bewildering year in the history of the refrigeration industry draws to a close, a strong sentiment seems to be sweeping the industry for some action toward real cooperation between all the various associations and tag-ends of this heterogeneous business.

If something of this sort does work out, it would be just about the finest Christmas present the rank-and-file of the industry could receive.

The NEWS has long pled for rationalization of the industry through cooperation. We have argued that, old jealousies and fears and distrust notwithstanding, every factor in the industry has practically nothing to lose and almost everything to gain by forgetting differences and sitting down with old rivals to work out mutual problems in complete harmony.

THEY'RE A NICE GROUP WHEN YOU GET TO KNOW THEM

From where we sit, it shouldn't be too difficult. All these "diverse elements" are customers of ours (either advertisers or subscribers), and when you get to know them, most of them are "right guys." Those so-and-sos in that other association are, for the most part, swell fellows just like the friends you've made in your own association *when you get acquainted.*

The fact of the matter is, nobody argues with this line of thought in principle. And nearly everyone you talk to about the matter agrees that it's a crying shame the industry is so divided.

Problem is: Who is going to bell the cat?

For the past year and a half various idealistic individuals have been trying it. One group has approached another. One or two men have figured out a way of getting at the problem, and have formed committees. And somewhere along the line, snags have been struck.

Chief snag seems to be that old question: "Who's behind this?" If one group started out to achieve industry harmony, other groups were suspicious of the motives. Even when two or three groups formed a tentative nucleus, others kept their fingers crossed.

And so disappointment has followed disappointment.

INDUSTRY OPINION FAVORS GETTING TOGETHER NOW

Now, however, the ground swell of industry opinion favoring cooperation to help win the war is so strong that many people feel it will overpower all objections.

It would seem that the time has come for some sort of spontaneous combustion, when representatives of all the different associations—say, the presidents, for instance—might get together in one meeting sponsored by nobody in particular.

If they can agree to some sort of elementary principles, take these principles back to their respective groups for ratification, and then return to "activate" these principles, the cat would be belled.

REASONS WHY COOPERATION IS REALLY NEEDED

What should these "first principles" be? Well, everybody has his own ideas. That has been one of the big troubles. In general, cooperation is needed for:

(1) Government relations
(2) Intra-industry relations
(3) Public relations

The first, of course, is a pressing need. Time after time responsible officials of the WPB and the OPA have declared that the industry was "messy" in its schisms, that their work would be expedited and simplified if they had just one responsible body with which to deal.

As a matter of fact, the NEWS received a letter from an OPA executive just a few days ago hoping that a previous editorial written on this subject would take effect. If a representative group were formed, the letter went on, the OPA had some urgent matters to take up with it. But, the letter concluded, *unless the group were completely representative of the industry,* there would be little to gain by dealing with it.

That confused orders and policies relating to the industry have emanated from Washington is probably more the industry's fault than it is Washington's. There have been too many people pouring their stories into Washington ears, and too many stories. It's no wonder that harassed administrators down there don't know what the score is.

The NEWS represents the "public" of this industry, the rank-and-file, the men who don't get to attend the meetings, or engage in the politics. All Joe Doakes in Homeville knows is that he has problems, and he doesn't know who has the answers—so he writes us. We don't have the answers, either; but we do know how Joe Doakes feels.

Joe Doakes doesn't care who leads the industry out of the wilderness. All Joe Doakes wants is some action. He feels that somebody has been letting him down during his period of dire troubles. He wonders if he hasn't made a mistake by becoming a part of the industry. He wants help.

We're at war. The time for petty jealousies ended December 7, 1941. It's now a year later, and though progress appears to have been made, nothing concrete can be seen. Delay should be brooked no longer.

Let's bell the cat.

They'll Do It Every Time
By Jimmy Hatlo
IT LOOKED LIKE IT MIGHT RAIN, DEAR, SO I THOUGHT I BETTER DRIVE DOWN AND PICK YOU UP.
WELL, I SEE THE WELCOMING COMMITTEE IS ON HAND TO MEET US WITH CLUTCHING HANDS.
IT RAINED PITCHFORKS ALL WEEK. BUT THIS IS THE FIRST DAY ME WIFE SHOWED UP TO DRIVE ME HOME.
YESSIR THAT'S A MIGHTY OMINOUS-LOOKIN' SKY.
I'M A MONEYED MAN — FROM THE PAY-WINDOW TO THE GATE.
PAYMASTER
FUNNY HOW THOUGHTFUL THE DAMES SUDDENLY BECOME ON PAY-DAY.
THANX TO DON HARGRAVES, LOS ANGELES.
4-30 JIMMY HATLO
Copr. 1942, King Features Syndicate, Inc., World rights reserved.

LETTERS

HISTORY OF INDUSTRY SHOWS LACK OF COOPERATIVE EFFORT

5227 Highland Ave.,
Kansas City, Mo.

Editor:

As a subscriber over a considerable period of time we have been very much interested in articles, editorials, etc., always appreciating the sincerety and, at times, being amused at the trend of the discussions. While the standing of air conditioning and refrigeration at Washington is certainly to be deplored, glancing at the history of the industry it is not at all difficult to understand that this condition is but a sequence of the trends of human nature. A name familiar to all practical men in the game is called "trouble shooting," viz. a procedure by which difficulties are located and analyzed. There are times when it is necessary to apply drastic changes and though not always possible to proceed immediately, the following may serve as food for thought in eventually getting hold of the matter.

First. The real pioneers of the industry were known as the Big 4, viz., Ezra Frick, Theodore Vilter, Henry Vogt and Fred W. Wolf. Among a large percentage of their successors and others coming into the field of manufacture of industrial and larger equipment there has always been an antagonism, largely the result of range of ideas of mechanical designs and constructions, to say nothing of applications details, etc.

Second. With domestic and small commercial phases entering the picture, sales promotion and volume production were the impelling forces with often a lack of proper regard for balanced engineering which, in the final analysis, is the real foundation on which the industry rests.

Third. For the development of commercial refrigeration and air conditioning sales volume an undue emphasis has been placed on automatic features and without a sufficient appreciation of the fact that always there are three elements present — "Engineering," "Installation" and "Equipment." The sales promotions programs to secure distributors have painted rosy pictures of profitable business; prepared endless volumes of sales and engineering details—in many cases the enormous size and extent defeating their purpose, etc. then with the economic, labor and other conditions the growing disposition of the manufacturer to disclaim any responsibility other than for the equipment itself the distributor finds himself in deep water without support which accounts for the large percentage of turnover of that specie. He then proceeds to go in business for himself. With sufficient financial strength and engineering ability he is successful, otherwise he will proceed as a service organization or individual but, in either event, without regard for the product of any certain line except and to the extent it may suit his particular need.

Fourth. Through the years an element which has had a definite bearing has been the attitude between the high and low pressure (Ammonia vs. Methyl, "Freon," etc.) equipment sales organizations which has too often been of a highly critical nature. This together with the building of independent service organizations has been confusing in the mind of the layman and for him on the subject of refrigeration has developed a psychology that "there is nothing to it."

Fifth. While there has frequently been a definite criticism of the handling in Washington, it should not be overlooked that as in the record of our penal institutions it has been rather definitely established that the real engineer or craftsman is most seldom a criminal, neither is he a politician, and it is pretty generally conceded that during the past decade a large majority of Washington positions have been and are political.

At that, it is our opinion that a study of the above and taking into consideration the wide variations in the different schools of thought having to do with mechanical design of machinery and equipment to say nothing of the principles of applications will rather clearly indicate the reason for lack of concerted action to secure proper recognition for the industry in our war effort.

While in Dr. Hainsworth's report to the St. Louis convention of the A. S. R. E. in December of last year it was indicated there is only a potential membership for the organization of less than three thousand, we are just optimist enough to believe that there are brains of the type and calibre in our industry to correlate and whip into shape the elements to secure the results desired.

E. G. MORGAN

American Standards Association Develops 'Victory' Simplification of Radio Parts

Program Worked Out Within the Industry Might Be Forerunner of Like Plan for Other Fields

NEW YORK CITY—Radio repair parts will soon be produced over "Victory" standards being set up now by the American Standards Assn. to assure continued operation of all modern home receivers for the duration of the war, it is announced here.

The ASA simplification and standardization begins at the request of War Production Board and Office of Price Administration, the association explains. Radio tubes are not included in the project.

Dr. O. H. Caldwell, former Federal Radio Commissioner and now editor of radio magazines, is chairman of technical experts on ASA's Civilian Radio war committee in charge of the work.

It is expected that WPB and OPA will allot materials for manufacture of the standard replacement parts and to issue limitation and price orders as soon as Dr. Caldwell's committee has finished its standardizing job.

His group declares that it is making every effort to provide units that will be mechanically interchangeable with present parts with a minimum of difficulty. Moreover members say that sufficient parts of each type will be included in the standards to adequately service almost all of the home receiver sets in use today.

The simplification program proposes some 62 standard volume controls to serve as replacements for the many more different types now used in home radio sets built within the last six years. Similarly, nine electrolytic and 11 paper capacitors are being considered for the capacitor field. Types of transformers, chokes, coils, resistors, etc., will also be cut and standardized by new specifications.

Production of the war parts furthermore calls for use of non-critical materials, or use of less critical materials, whenever possible, compared to the unrestricted composition of their peacetime prototypes.

The actual number of parts will be held to an absolute minimum in the forthcoming standards through simplification of the number of varied ranges now existing and through use of multi-purpose units when practicable. "This will further serve to reduce the amount of strategic materials kept in inventory by minimizing the stock of parts held by jobbers and service men," points out the association.

According to present plans, WPB's Radio Parts Industry Advisory Committee will furnish draft specifications and simplified parts lists to the ASA committee. Following review and revision of the lists by ASA members, the proposed standards will be sent for comment to various radio set manufacturers, design laboratories, service organizations, and other affected groups.

Before the standards are officially set forth, ASA is to consider these comments, making any desirable changes suggested in them.

Included on the committee headed by Dr. Caldwell are John Borst, chief engineer of John F. Rider Publisher, Inc.; M. M. Brandon of Underwriters' Laboratories, Inc.; J. D. Filgate, commercial contact manager of Hazeltine Service Corp.; Garrard Mountjoy of the RCA License Laboratory; M. J. Schinke, service committee chairman of the Radio Manufacturers Assn., with P. R. Butler, also of the RMA as alternate; K. S. Geiges of the simplification branch, WPB; E. A. Graham, head of the consumer durable goods section, standards division, OPA; Frank McIntosh, radio and radar branch, WPB, with Samuel Weisbruth of the WPB as alternate; and George F. DuVal, president of the Radio Servicemen of America, with Arthur E. Rhine as alternate.

The 'National Roster of Scientific Personnel' Seeks More Registrations

Men In 60 Specialized Fields Sought by WMC

WASHINGTON, D. C.—Following recent increases in demand for technically-trained personnel, the National Roster of Scientific and Specialized Personnel is urging senior and graduate students of chemistry, physics, engineering, and other specialized fields to register their skills. The principal national professional and scientific societies are constantly cooperating with the National Roster to stimulate complete registration in their respective fields.

The National Roster, a part of the War Manpower Commission, now has listed and punch-card-indexed approximately 550,000 names in more than 60 specialized occupations. These fields cover every technical activity from genetics and geophysics to housing and radio broadcasting. The Roster is a compilation of the nation's technical manpower resources, for such use as the critical war emergency may demand.

Registration with the Roster is not to be considered application for employment. Many who have filled out the questionnaires are now at work in their chosen professions. Many of those registered have received offers of employment. Acceptance of such offers is optional with each individual registrant.

140,000 RECOMMENDED

In the past 20 months 140,000 men and women have been referred to prospective employers of specialized personnel, particularly for war production and research. Methods will shortly be inaugurated whereby the Roster will maintain a check on the results of its recommendations.

Close cooperation is maintained between the Roster and the local offices of the United States Employment Service. Various industries needing technicians are now consulting local USES offices for information about available chemists, engineers, accountants, statisticians, and scores of other specialists.

The National Roster is constantly used to advise local Selective Service boards through National Headquarters regarding the importance of work now being done by civilian technicians of draft age.

USE OF INFORMATION

The overall information of the Roster is used as a basis to determine shortages in any technical field; to supply needed professional and scientific personnel for the armed forces, war industry, and governmental agencies.

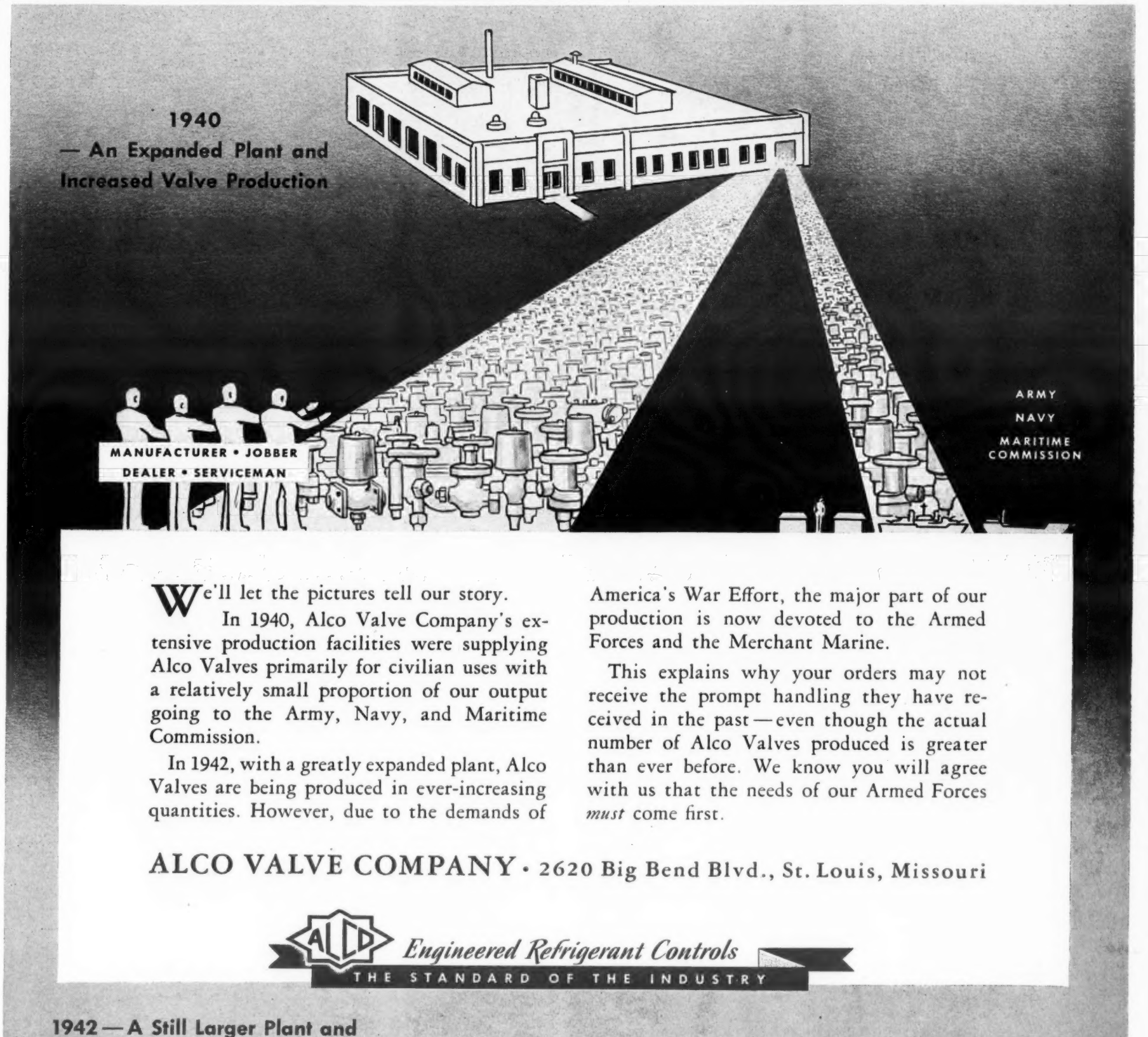
To register with the Roster, a man or woman with scientific or other specialized training should write to Dr. Leonard Carmichael, Director, National Roster of Scientific and Specialized Personnel, War Manpower Commission, Washington, D.C., mentioning the field or fields in which he or she has training or knowledge.

'Takes Lot of Training To Make Servicemen' Says Noted Educator

LAKE PLACID, N. Y.—That it takes a lot of training to produce a service man to repair equipment was brought out here in a speech by Dr. Lynn A. Emerson, chief of industrial education at Cornell university, at an October conference of principals, supervisors, and directors of vocational schools.

The service man today, Dr. Emerson emphasized, is trained for individual jobs to meet the trend towards specialization found in the field of servicing mechanical equipment. Moreover, training in service work is being added to the original program of teaching for production only, he explained.

Dr. Emerson further pointed out that methods of instructing the industrial teachers who will train such workers also must keep abreast of all three stages of the training program: engineering, production, and servicing.



We'll let the pictures tell our story.

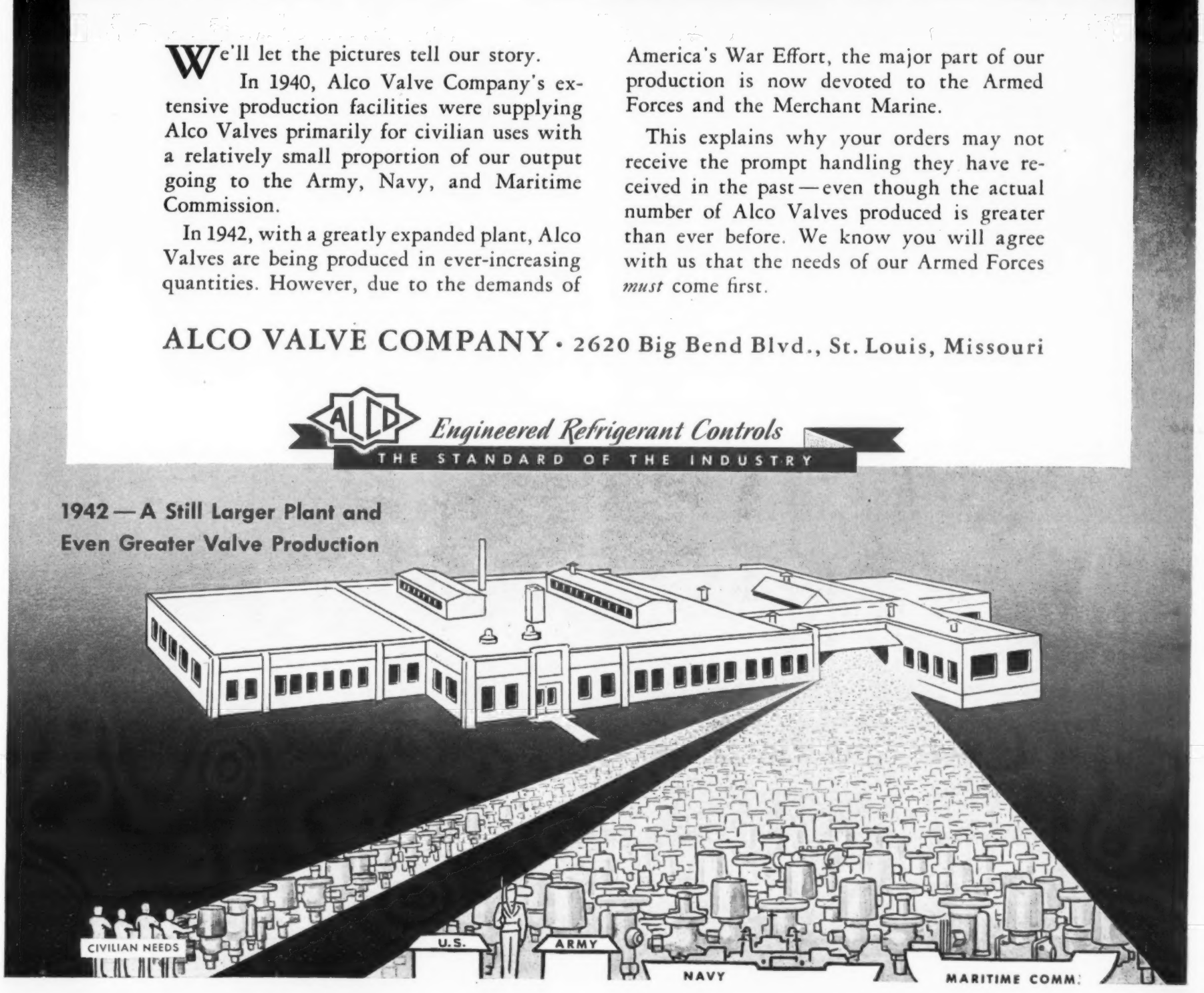
In 1940, Alco Valve Company's extensive production facilities were supplying Alco Valves primarily for civilian uses with a relatively small proportion of our output going to the Army, Navy, and Maritime Commission.

In 1942, with a greatly expanded plant, Alco Valves are being produced in ever-increasing quantities. However, due to the demands of America's War Effort, the major part of our production is now devoted to the Armed Forces and the Merchant Marine.

This explains why your orders may not receive the prompt handling they have received in the past—even though the actual number of Alco Valves produced is greater than ever before. We know you will agree with us that the needs of our Armed Forces *must* come first.

ALCO VALVE COMPANY • 2620 Big Bend Blvd., St. Louis, Missouri

ALCO *Engineered Refrigerant Controls*
THE STANDARD OF THE INDUSTRY



Use of Exchange to Buy and Sell Scarce Refrigeration Products

Oberc Explains Functions of Materials Exchange

By J. M. Oberc, War Emergency Materials Exchange, Detroit*

The paramount issue today which concerns all of us is the War Effort since upon it depends our plan of life.

To us jobbers, as businessmen, the subject of Materials is very important. Upon available material depends our employment, and our customer existence, to say nothing about the health of mankind.

Where in heck can we jobbers get materials for essential civilian requirements, or for war contract work in the quickest time to meet the demands upon us, and men, it's our patriotic duty to serve all of these factors today, and I mean the civilian as well as the fighting forces. This is a fact today more so than it was in peace time.

Sources of Supply

The resourcefulness of the jobber in these war times is challenged. Anyone can sell materials and be in the jobbing business during a time of abundant supplies. The civilian population is not yet aware of the serious condition with which it is faced. The Distributor, Dealer, Contractor, and Service Engineer today realize what seems to be in store for all of us, and they are looking to us for help.

With the low priority ratings available to the trade under Orders P-100, P-126, L-38, and L-63, we can hardly look to our past suppliers to keep products flowing into our storerooms. The outlook for getting any material assistance under existing conditions is very discouraging.

Individually, most of us have contacted our more important sources of supply to learn what the score is, and what the future might hold in store for us.

One of the larger coil manufacturers upon being approached as to whether they could now or in the future fill coil orders under A-8 as a result of L-38 and PD-1A, advised: "Joe, our company is not in a position to entertain ANY orders today for coils unless it calls for at least 1,000 or more coils of one kind, and carries a double A rating."

What does this mean? The handwriting is on the wall! The manufacturer has not taken an arbitrary stand. I am sure that he is doing everything within his power to be helpful. Conditions today point in the direction that we shall have to get along as best we know how by substitution, conservation and rotation of available stocks in the hands of manufacturers and jobbers to the end that stocks of materials which are unneeded in present territories be moved to territories where they are urgently required.

How It Can Be Done

I have just suggested what, in my opinion, **should be** and **can be** done in order to prolong the jobbers' existence and at the same time aid the war effort. What you want to know is "How Can it Be Done?" Well, Gentlemen, there is a plan already laid out for you, an actual means whereby this can be accomplished, **efficiently** and **economically,** that is, through the War Emergency Materials Exchange! W-E-M-E has been functioning since Sept. 1. You are all acquainted with it, but I believe you have not taken advantage of its opportunities to help you.

The War Emergency Materials Exchange should not be confused with any governmental agency. The name was fathered by a very prominent, and I might say probably one of the most active, persons in our affairs and this naturally includes the entire industry. It was selected to be descriptive of our operation plan.

In our correspondence, advertising, and prospectus we call especial attention to the fact that we are a privately financed organization, headed by "Bill" Keefe, who was formerly sales manager of Fedders Mfg. Co., and the speaker. The War Emergency Materials Exchange was organized to assist the manufacturer and wholesaler or jobber to the end that materials which have become idle or excessive in their hands, as a result of curtailment of production or dormant in certain sales areas, be directed to production or sales channels where they would aid the war effort and essential civilian requirements.

To date our activity has resulted in directing considerable quantities of critical materials, both in the raw and finished state to producers as well as to sales outlets. It can do likewise for you through our efficient and economical organization.

Buying and Selling Guide

Our Buying & Selling Guide, which is mailed periodically to approximately 5,000 prospective buyers and sellers contains considerable quantities of raw and finished materials. The concerns whose products are listed are national concerns who realize the importance of diverting surplus or unneeded stocks into active channels, thereby relieving mills and former sources of supply from the burden of producing raw materials so vitally needed to the War Effort and Essential Civilian Requirements.

The cost for this service is very small. The large manufacturers were the first ones to immediately recognize the economy of our service, and thus they mare it possible for us to prepare the first issue of the Buyers & Sellers Guide.

We experienced some difficulty in getting started. WEME has been swamped with orders, inquiries, etc., and consequently the Standard Practices which were originally planned to effectuate a prompt, efficient and economical service to be sacrificed temporarily.

Other Handicaps

Beyond publishing the Buying & Selling Guide to tell all factors quickly we were ready to assist in disposing of their surplus materials and also to aid in locating needed materials, it might have appeared as if we had "gone out of business." As a matter of fact, this is the story that got around some parts of the country. On the contrary, we have been busy taking care of urgent demands by telegram, phone, air mail, etc., which had to be given immediate attention.

Further, we have been handicapped because many of the original lists did not contain full descriptions of materials and individual prices, plus the fact that there was lack of mutual understanding regarding our service fee, and the requirements necessary to participate in the WEME service. All of this since has been called to the attention of our clients, because we felt sure they would be willing to assist us in overcoming former obstacles.

We certainly are thankful to those who have cooperated with us to the end that our next issue will be a complete working model. The next issue has been held up because Bill Keefe and I were overly concerned regarding the lack of participation on the part of the jobbers, for whom this plan was originally instituted, and we wanted to get your reaction following this presentation. That's why I am here.

Requirements for Seller

To insure smoother and more efficient operation in the future, we have established certain requirements for the buyer and seller, who desires to participate in the WEME plan, as follows:

Seller: 1. Submit a list of materials, in duplicate, double spaced, showing (a) Quantity, (b) Part Number, (c) Full Description, and (d) Individual Net Price of Each Item, exclusive of the WEME Service Fee.

2. To enter into a written agreement (which is tendered by WEME after inspection of list of materials submitted) to sell same either on an (a) Exclusive, or (b) Prior Sales Basis.

3. To on the first, tenth and twentieth day of each month supply us with a revised list or a letter stating there is no change in previously furnished lists. This to the end that we may get out three issues a month—up-to-date issues.

4. To supply us two copies of Invoice.

Requirements for Buyer

Buyer: After selection of materials is made, the Buyer is requested to contact us for quotation. Always, and this is important, please refer to Code Number, Page Number and Bulletin Number and Date. After formal quotation is made and all conditions are acceptable to the Buyer, the latter will be advised the number of purchase orders which will be required to procure the needed materials, this being necessary due to the fact that there may be more than one source to fill an order.

Orders are not to be written on the War Emergency Materials Exchange. This is important, since WEME neither buys nor sells materials, acting merely as a clearing medium between Buyers and Sellers, locating and placing materials, where in the raw or finished state to points where they will do the war effort and essential civilian requirements the most good in the least time and with a minimum of expense. Orders shall be complete in every detail, including priority extensions, End Use, etc.

By this time, you undoubtedly have become acquainted with the workings of the WEME organization, and what is required. You have been wondering too just when the dickens I was going to get down to brasstacks and tell you what this service is going to cost.

There are several ways to put this. Diplomatically, it could be stated: That we make contact with our clients by personal call, telephone, telegraph, the WEME Buying & Selling Guide, Special Bulletins covering materials which are urgently needed and which missed standard listing, district representatives located in strategic production and distribution centers, etc. This is exactly what we do, however, and I could further say that WEME assumes all cost of cataloging, listing, advertising, traveling, and any other item of expense which may be incurred by us in the fulfillment or discharge of our arrangement with you and that you pay only the nominal Service Fee.

On the other hand, I could say it this way and probably this is the way you would prefer it. **Our cut, every time we perform a service, is 10%. Yes, this charge is 10%** of the billing price.

The War Emergency Materials Exchange is no different than any other business enterprise. It has the same operating expense as any sales organization. Further, let me make it clear to you that it is not just two fellows who go together. We have a service to offer to you now.

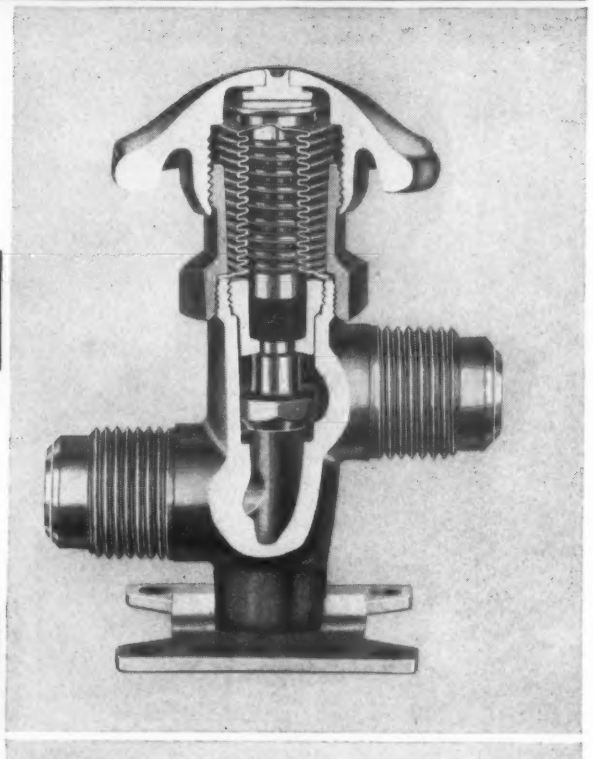
Remember, the trade is looking to my and your resourcefulness as a jobber. Let's not let the trade down. Let's Praise the Lord, and pass surplus stocks into production and sales channels to speed Victory.

*Talk delivered before a meeting of the National Refrigeration Supply Jobbers Association, Nov. 18, in Chicago.

IMPERIAL REFRIGERATION PRODUCTS for those must jobs

With IMPERIAL FITTINGS you can make TIGHT CONNECTIONS that stay tight

● Imperial flared fittings for connecting up copper, brass, aluminum, steel, block tin and plastic tubing are made in a wide range of types and sizes. Their wide use by the industry is the best evidence of the superior quality of the fittings that will help you make tight connections that stay *tight*.

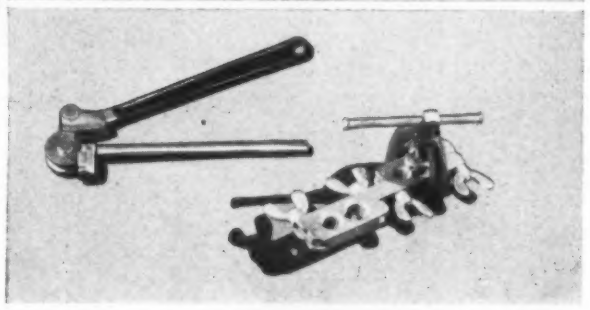


With IMPERIAL SYLPAK VALVES you get DOUBLE SECURITY

● Sylpak valves offer the double security of the Sylphon bellows plus a good spring loaded packing. These valves are available for tube diameters from ¼" to ¾" for S.A.E. or solder fittings as desired. Sylphon type valves can also be furnished in sizes up to 1½" female I.P.T. and 1⅝" O.D. tube size.

With IMPERIAL TOOLS you can do a BETTER installation job

● Imperial Tools for cutting, flaring, bending, coiling and swedging tubing make it possible to turn out a good looking, tight job without injuring the tubing.



THE IMPERIAL BRASS MFG. CO.
565 S. Racine Ave., Chicago, Illinois

NEED METHYL CHLORIDE?

Now is the time to get it!

Ample supplies of Methyl Chloride are at present available for the charging and servicing of installations which may be constructed or serviced under existing War Production Board regulations. We expect to be able to fill the approved requirements of the refrigeration industry so far as material is concerned. It is suggested that you do not stock up unnecessarily. Electrochemicals Department
E. I. du Pont de Nemours & Co. (Inc.)
Wilmington, Delaware

DU PONT
REG. U. S. PAT. OFF.

METHYL CHLORIDE

Don't let idle cylinders hold up supplies now available. Look through your stocks and warehouses for any empty cylinders, or cylinders which can be emptied . . . *and return them promptly.*

Better Things for Better Living . . . Through Chemistry

G-E Opens Factory-Operated Service Center in Atlanta; Southeastern District To Be Served By Unit

ATLANTA, Ga.—In line with General Electric Company's appliance service program intended to facilitate appliance repairs another "major appliance service center" has been put into full operation.

Located at 49 Auburn Ave., Atlanta, the new center will serve the Southeastern states. Similar centers have been in operation for some time in Boston and San Francisco. These centers are factory-operated by the company's Appliance & Merchandising Department, Bridgeport, Conn.

The Atlanta service center occupies a four story building containing 20,000 square feet of floor space. It is under the supervision of J. M. "Scotty" Walker, G. E. district manager for the Southeastern area on appliances; Paul Graves, district service supervisor, who is in complete charge of the service center; and Martin F. Donohoe, who is manager of the center's warehouse.

The three main functions of the service center are as follows: 1. It is a supply parts depot for G. E. appliances, stocking more than 8,000 separate parts; 2. It is a repair station for the Southeastern area on the small G.E. appliances such as vacuum cleaners, toasters, roasters, mixers, coffee makers, grills, percolators, clocks, fans, sunlamps, etc.; 3. It is a warehouse for refrigerator replacement units.

Functions Differ

It will be noted that the exact functions of the major appliance service centers may be slightly different in different sections of the country, depending upon the adequacy of existing facilities in each area at the time the center is established. The purpose of the centers is to round out and make complete the service which General Electric Co. wants its dealers and their appliance customers to have available to "keep 'em working."

The function of the new Atlanta center on small appliances (cleaners, toasters, roasters, mixers, etc.) is to serve as headquarters for both repair facilities and parts, either directly to the household user who may come to the center for over-the-counter parts and repairs, or to dealers, distributors and utilities who in turn will serve the household user.

This means that a woman living in the vicinity of Atlanta, who owns an iron that needs repair, may go directly to the regional appliance service center at 49 Auburn Ave. and buy over the counter at list price any needed replacement part, or she may leave the iron at the center for repairs, and call for it later. She may also take the iron or any other G.E. appliance to any G.E. appliance service center dealer, who in turn will make use of the center in securing needed parts or repair facilities if he does not have them on hand.

The over-the-counter, direct-to-the-user service on small appliances, will of course be accessible only to residents of Atlanta and its immediate vicinity. Appliance users in other parts of Georgia, and in the other Southeastern states served by the Atlanta center, will get their repairs and parts from their local G.E. dealers, who in turn will use the facilities of the Atlanta regional service center.

The Atlanta center will not in any case send service men to make calls at the home of appliance users.

Distribution Setup

On major appliances, such as refrigerators, ranges, water heaters, etc., the Atlanta center will supply parts only to G.E. major appliance distributors, who will in turn supply them to G.E. dealers. The major appliance distributors in the Southeastern area served by the Atlanta center are L. W. Driscoll, Inc., Charlotte, N. C.: Perry-Mann, Inc., Columbia, S. C.: the G.E. Factory Distributing branch, Tampa, Fla.; W. D. Alexander Co., Atlanta; Matthews Electric Supply Co., Birmingham, Ala.; G.E. Supply Corp., Nashville, Tenn.; and in the case of refrigerator replacement units only, the G.E. Supply Corp. at New Orleans.

As a warehouse for refrigerator replacement units, the Auburn Ave. center services an area extending beyond the states of North and South Carolina and including Northeastern Texas, Eastern Arkansas and Southeastern Missouri, as well as Louisiana, Tennessee, Alabama, Florida, and Georgia. The center has warehousing space for 1,500 refrigerator replacement units.

According to W. C. Noll, manager of the Product Service Section of General Electric's Appliance & Merchandise dept., the company's aim is to establish adequate service through factory-operated centers wherever needed, in all parts of the country. Already there are scattered factory-operated repair stations on one or more G.E. appliances in more than 50 cities.

Dealer Appointments

The Atlanta service center in collaboration with the Appliance and Merchandise Department's district office, located in the Red Rock building in Atlanta, the G.E. distributors in the area, are appointing servicing dealers throughout the Southeast.

To qualify, the dealer must meet 10 qualifications that encompass manpower, equipment, reasonable pricing, customer relations, reporting, stocking and promotion. While the first such appointment was not made until April, as of October approximately 400 dealers and local utilities had qualified and been duly appointed in the Southeastern area.

In the places of business of most of these will be found the emblem of the authorized G-E Appliance service dealer. This sign is likewise being shown in the company's national advertising, with copy urging customers with inoperative G-E appliances to see "the dealer who displays this sign."

Operating Personnel

District manager for the territory is J. M. Walker, better known as "Scotty." In 1929 "Scotty" affiliated himself with G-E's refrigeration section at Cleveland, as a representative contacting public utilities. From 1929 to 1937, Mr. Walker undertook many assignments, being for some time with the Rex Cole organization in New York City. Since 1937 he has been in charge of the Appliance and Merchandise department's district office in Atlanta.

Paul Graves, district service supervisor, has been a General Electric employe since 1928. In that year he joined the Schenectady operation as a student engineer in radio test. From then until 1931 he did test work for the company in Pittsfield, Mass. and Philadelphia. In 1932 Mr. Graves joined the company's Air Conditioning department and, in 1937, became field engineer for this division in Atlanta. He joined the appliance field force as district service supervisor in October, 1941. In this capacity he is responsible for both the entire operation of the center and for all field trade relations in the Southeast that have to do with service.

Representing General Electric as manager of the warehouse is Martin F. Donohoe, who has long been associated with the electric appliance business. Before joining G-E in 1930 Mr. Donohoe was connected with the National Electric Supply Co. in Washington, D. C. When this distributing organiaztion was sold to General Electric in 1930 "Mike" joined G-E's laundry equipment section as field representative. He has been stationed in Atlanta since 1932, and since April of this year has been affiliated with the Atlanta center.

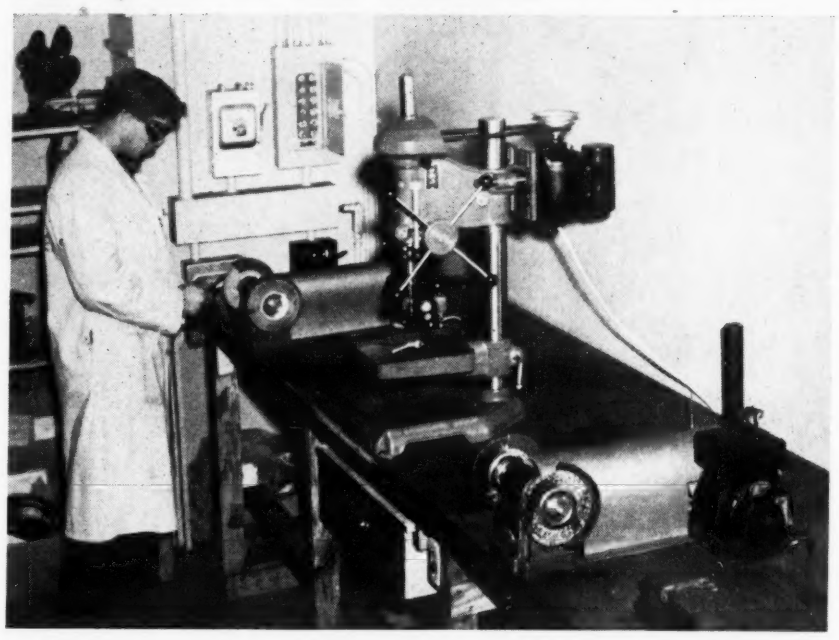
Assisting Mr. Graves in his field activities is Fay W. Wheeler, also a General Electric representative of long standing. Prior to 1932 Mr. Wheeler was associated with the Edison General Electric Co. in Chicago. In that year he joined G-E, serving a short time in Bridgeport, Conn., before taking an assignment on heating devices in Dallas. Since then he has been continuously employed in southern territory; in Florida from 1937 to 1939, and in the Atlanta district sales office from 1939 to July 15 of this year, when he was transferred to the product service division.

Rounding out the organization are F. W. Johnston and I. W. Harrell, on small appliance repairs; E. E. Kron, price and order clerk; Miss Virginia Cliver, secretary; Mrs. Anne McCommon, billing clerk; George R. Stith, receiving and shipping clerk; and Ulus S. Boatman and W. Scott, assemblers.

Direct Atlanta Service Center

Three principals in the establishment of the Atlanta Appliance Service Center. Left to right: J. M. Walker, district manager on G-E appliances in Southeast; Paul Graves, district service supervisor, who is in direct charge of operating the Atlanta center; Martin F. Donohoe, manager of the center's warehouse.

One of the Benches in Shop



Another view of the appliance workshop, showing one of the repair men working at bench.

Gay Builds Addition

LOS ANGELES—An addition to the plant facilities of Gay Engineering Corp. of California, refrigeration engineers, is being erected at 2707 East Twelfth street, Los Angeles, Calif., to cover an area of 33 x 495 feet.

REFRIGERATION, A WAR PRODUCTION TOOL

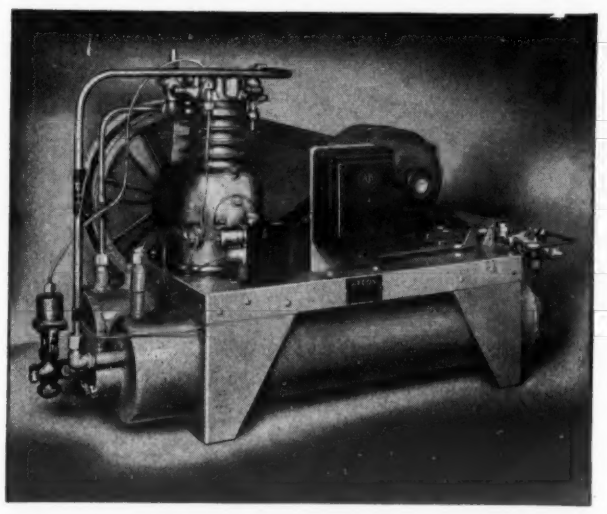
Cooling of Coolant oil for machine tools for making guns, airplane and tank engines, and shells is now a proven necessity to speed up production and insure accuracy.

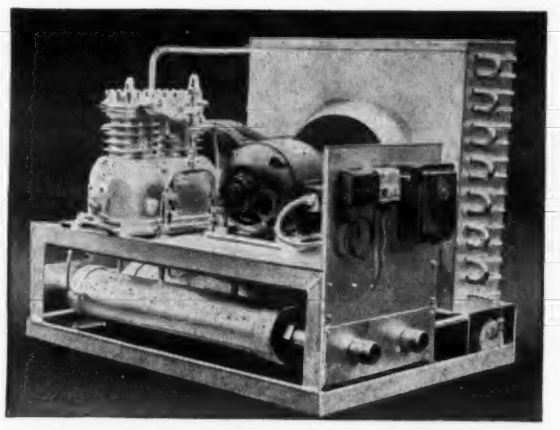
One user reports 3½ hours to hone a 40 MM anti-aircraft gun without this cooling and 45 minutes with cooling. They state further that without cooled oil the rejects are much greater.

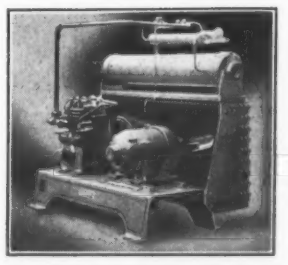
Another manufacturer of grinders reports a production of 12 pieces per hour with cooling and only three pieces without.

Thus a small investment in oil cooling and filtration equipment saves the price of three machine tools and **in effect puts three more men in the army of production and, we don't have to pay those men.**

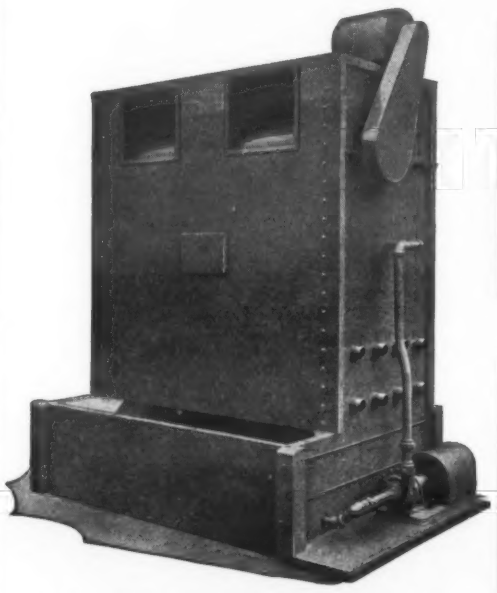
Probably the saving in machine tools and building space is $50,000.00 for each oil cooling and filtration unit, and the value of men saved is inestimable in war time.



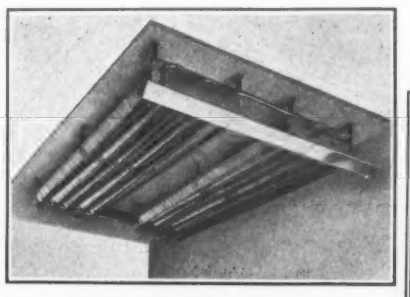




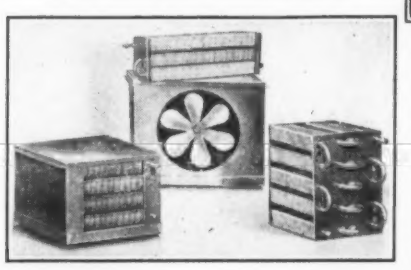
OIL AND LIQUID COOLERS, ALL SIZES, ALL PURPOSES

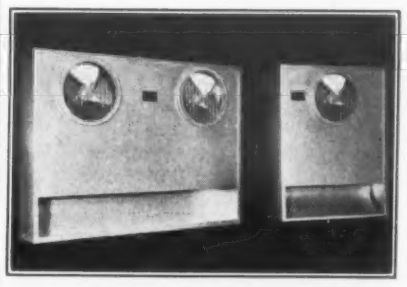


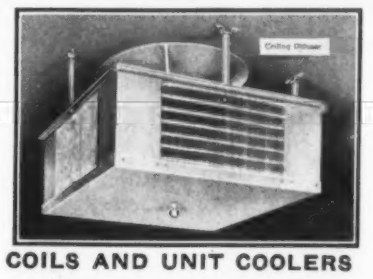
EVAPORATIVE OIL COOLERS AND CONDENSERS



DOWN DRAFT SYSTEM







COILS AND UNIT COOLERS

REFRIGERATION ECONOMICS COMPANY
CANTON, OHIO

OPA Makes Price Rulings on Rentals and Contract Service

Interpretations of Regulation No.165 Also Touch Upon Problem of 'Free Service'

WASHINGTON, D. C.—A number of interpretations affecting ceiling prices for "services" established under the General Maximum Price Regulation and Maximum Price Regulation No. 165 have been issued by the OPA.

COMMODITY SOLD IN CONNECTION WITH SERVICE

"Services" under Regulation 165 includes the work done, and any commodity or article sold in connection with the sale of such services, and the itemized billing of the part or commodity separate from the cost of the service will not take the part or commodity out of the definition.

RENTALS

The leasing of a commodity under a rental contract which enables the lessee to acquire title thereto at any time during the term of the lease by payment of a stated valuation less allowance for depreciation, is a "rental" as defined by section 1499.116 (12) of MPR 165, if the allowance is not related to the amount of rent paid under the rental contract.

If, however, a rental agreement is a substitute for a conditional sale, as when it gives the lessee an option to buy by making a nominal payment at the end of the term, the transaction is not a "rental" within the definition.

DETERMINATION AND EFFECT OF MAXIMUM PRICES—REPAIR AND MAINTENANCE SERVICE

During and prior to March, 1942, a calculating machine company rendered routine repair and maintenance service to users of its office machines for an annual flat charge. The company customarily made two to four routine inspections each year as part of this service. Because of transportation difficulties and the loss of maintenance employes to the armed forces, and to effect economies, the company has reduced the number of its annual inspections, while offering to make any additional inspection upon request of any customer. Since the proposed reduction in inspections does not affect the quality of the repair and maintenance service, and since a customer can at his option receive as many inspections as before, the company is rendering at least a similar service to the service previously rendered, within the meaning of MPR No. 165 as amended, and its maximum price for the "new" service is the price charged for the "old" service.

CLASS OF PURCHASERS—CONTRACT PURCHASER

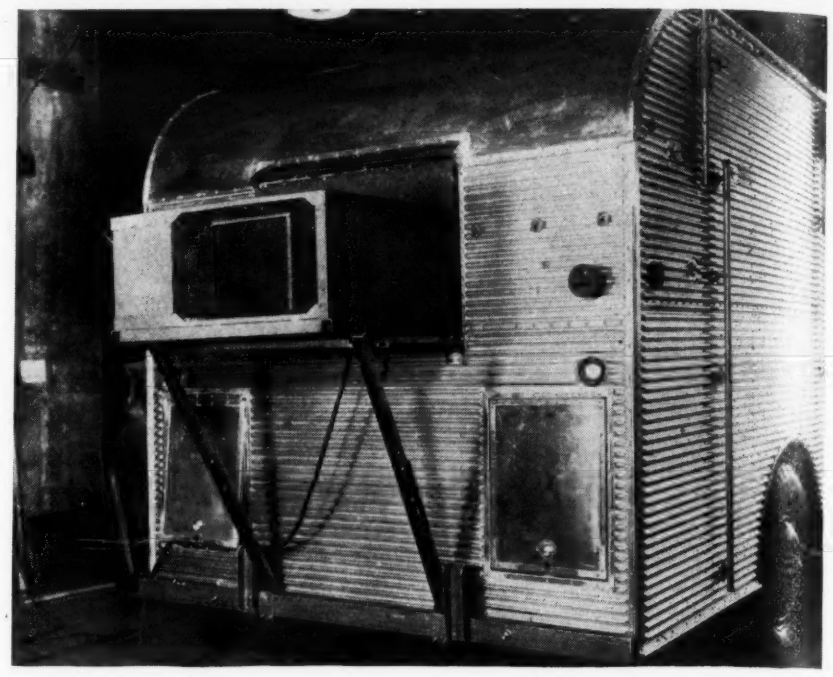
An automobile service station whose rate for servicing cars was $1.50 per hour to all its customers in July, 1941, entered into a yearly contract on July 1, 1941 with the U. S. Soil Conservation Service whereby it agreed to service its cars at the rate of $1.50 per hour. When entering into a new contract in July, 1942, it may raise its rate to the Soil Conservation Service to $1.75 per hour, the rate charged to all its other customers in March, 1942. The Soil Conservation Service is in the same class of purchasers as the station's other customers, since the seller did not differentiate in price at the time of setting the price to the Soil Conservation Service (that is, at the time of making the contract).

SUPPLYING OF FREE SERVICE

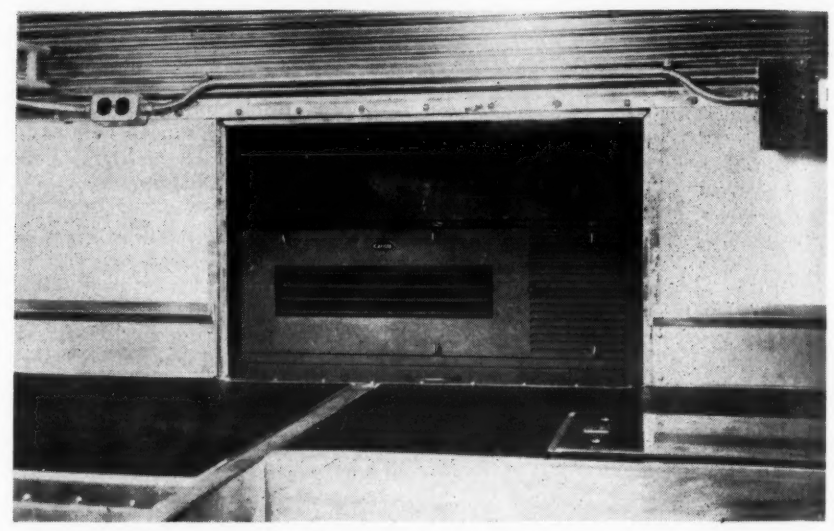
The discontinuance of a free service which was rendered in March, 1942, by sellers of commodities subject to price control at the March levels without charge only to persons purchasing those commodities, is a violation of the appropriate regulation, since termination of the free service would be equal to an increase in the price of the commodity. So dealers, if they continue to sell the commodity at the March, 1942 price, must continue to supply the free service. Any discontinuance of the free service must be accompanied by a reduction in price for the commodity in accordance with the appropriate Maximum Price Regulation.

The discontinuance of a free service rendered to purchasers of appliances sold after the effective date of General Maximum Price Regulation, which appliances during March, 1942, were sold with the free service, would be a violation of the applicable Maximum Price Regulation since to discontinue it would be equivalent to charging a higher price for the appliance than the price charged during March, 1942. Any discontinuance would have to be accompanied by compensating reduction in price.

An Air-Cooled Army Photographic Lab



Carrier air conditioning units are used in U. S. Army photographic trailers as shown above for the purpose of reducing the moisture content of the air and maintaining temperature that will permit efficient operation and production of photographic aerial films and prints.



How the unit appears on the inside of the trailer. One of these air conditioning units is installed in each of the two rooms of the trailer. Such equipment has functioned properly under desert operating conditions with temperatures as high as 120° F.

CENTERED IN A CIRCLE OF FAMOUS NAMES

Copeland — MADE IN U.S.A. — SINCE 1914

The WATER COOLER PIONEER That's Helped Make Them Famous

Since the birth of the industry the EBCO name has been in the center of the commercial water cooler picture. Visualizing early a healthy Nation's need for properly cooled drinking water, they assumed the pioneer's role . . . . took the lead in designing and manufacturing a commercially practical water cooler. And this early gained leadership has never been relinquished! Devoted to this one product, EBCO has made continual improvement in its efficiency, appearance and serviceability. But even more important to manufacturers and marketers of water coolers,

EBCO

has long been an outstanding example of streamlined production methods . . . . building water coolers on a continuous straight-line basis that means economy, better fabrication, and an all around higher-quality finished job. These are some of the reasons most leading manufacturers depend so greatly on EBCO as their prime source for finished water coolers. If you are not fully familiar with EBCO'S facilities, let us discuss your needs. Phone or write TODAY. No obligation.

Refrigeration by Kelvinator — Made by The EBCO Manufacturing Co, Columbus, Ohio, U.S.A.

The EBCO Manufacturing Company
401 W. Town St., Columbus, O.

DAY AND NIGHT WATER COOLER

Norge

OASIS

ELECTRIC WATER COOLERS
Allies of Production

Today MORE THAN EVER BEFORE —you NEED the "RECALIBRATOR"

IN these days when it is difficult to get any kind of equipment, you have all the more reason for making certain that the equipment you DO get will handle its job properly. In gauges and dial thermometers this means Marsh — instruments with the "Recalibrator."

Any gauge or dial thermometer can be knocked out of adjustment. But if its a Marsh instrument with the "Recalibrator," the twist of a screwdriver restores it to complete accuracy at every point on the dial. The "Recalibrator" doesn't merely compensate for error—it actually eliminates the source of error. It's your best defense against the jars and jolts of service work for years to come.

● The "Recalibrator" is available on all Marsh Gauges — standard on all Marsh Dial Thermometers. It is typical of the advanced design, the helpful features you'll find throughout the broad Marsh line – all products of 75 years of specialization. Write for refrigeration catalog.

JAS. P. MARSH CORPORATION
2067 Southport Avenue, Chicago, Illinois

MARSH
Refrigeration Instruments

You Can See the Beer Run Right Through It

This installation of Penco transparent plastic in a draft beer dispenser demonstrates how this tubing can be bent and formed for use in various types of beverage dispensing systems.

* * *

Transparent Plastic Pipe Is Made In Standard Sizes, Used with Flare Fittings

NEW YORK CITY—Penco Tenite transparent plastic pipe for replacement of tubing and piping made of critical materials in use in the beverage cooling industry, is now available in standard sizes.

Stock sizes range from 3/16 inches O.D. to 1½ inches O.D. in long length coils and 12-foot straight lengths in the larger sizes. It is a seamless pipe extruded in continuous lengths and possesses many advantages not found in other type piping.

TENNESSEE EASTMAN PRODUCT

Tenite transparent plastic pipe is manufactured from a cellulose acetate butyrate formula produced by the Tennessee Eastman Corp. of Kingsport, Tenn., and is distributed by North Penn Co.

Transparent properties of the material permit immediate detection of obstructions and impurities that might interfere with the flow or the quality of the beverage. Inside surface of the pipe is smooth and clear and can be kept clean by the customary cleaning devices now used in the beverage industry.

EASILY COILED

Penco pipe can be readily formed into spiral or flat coils for the commercially cooled beverage systems. The pipe is inert to all commercial beverages and consequently does not interfere with purity, taste, flavor, or carbonation of the beverage.

Plastic pipe may be threaded with ordinary thread cutting tools or adjusted to flared fittings. It can therefore be used in connection with standard equipment already installed in beverage bars, soda water fountains, and ice water coolers. Plastic fittings are being developed for all connections to this pipe and will shortly be on the market. Penco plastic tap rods are also made from Tenite tubing.

Bulletin Corrects Errors In Arc Welding Practice

NEW YORK CITY—"Fight waste," a new 14-page bulletin—"Make 3 do the work of 4"—has been recently issued by the Air Reduction Sales Co., 60 E. 42nd St.

The booklet which is designed to help arc welding operators consists of six shop posters illustrating a common wasteful practice, then showing the corresponding good practice. It points out the ease and simplicity of doing the job the right way. Copies may be had without obligation.

Ice Cream and Frozen Dessert Production Cut

WASHINGTON, D. C.—Approximately a 20% cut in December-January output of ice cream, ice cream mix, and other frozen desserts has been ordered for commercial manufacturers by the War Production Board here in an effort to relieve the most critical butter shortage in 10 years, officials say. Action was taken at behest of WPB's Food Requirements committee.

Planned to save butter fat for butter itself, the order also states that formulas used by producers during October must not be modified while the new regulation is in effect. Flavors and colorings, however, may be changed, say provisions of the order.

According to Clyde E. Beardslee, chief of the dairy products section of WPB, the regulation applies not only to ice cream plants but also to restaurants and other eating places that produce frozen desserts for consumption on their premises. These foods include besides ice cream and ice cream mix, frozen custard and milk sherbet.

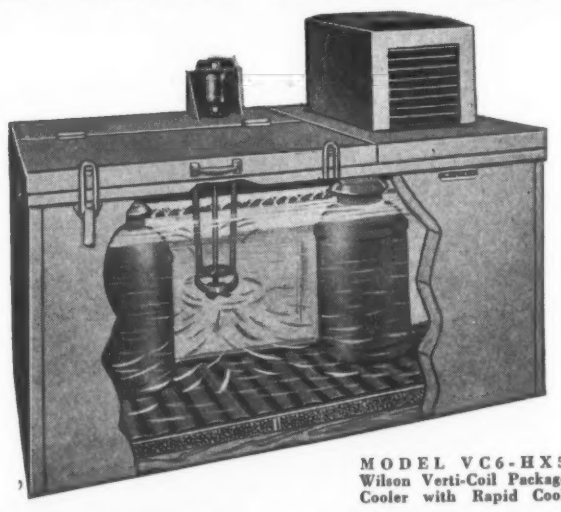
An Expansion To Handle Essential Business

"Because of increasing priorities business we have had to increase our personnel, and consequently more office space and larger warehouse facilities were necessary," states R. L. Hinshaw of the Hinshaw Supply Co., refrigeration supply jobber in Sacramento, Calif., in submitting the above picture of the Sacramento store (in which an excellent job has been done of supplying the wide variety of refrigeration supplies). The facilities in the new location more than quadruple the space occupied in former quarters.

WILSON

1943

COMMERCIAL REFRIGERATION



MODEL VC6-HX50
Wilson Verti-Coil Packaged-Unit Milk Cooler with Rapid Cooler Agitator.

WILSON EQUIPMENT DELIVERABLE

UNDER LIMITATION ORDER L-170:

- IMMERSION TYPE MILK COOLERS
- SURFACE TYPE MILK COOLERS (AERATORS)
- BOTTLE STORAGE MILK COOLERS
- BRINE TANKS
- ELECTRIC DAIRY WATER HEATERS

UNDER LIMITATION ORDER L-138 WITH PD-1A APPLICATION APPROVED:

- ELECTRIC ICE-MAKERS
- FARM FREEZERS (Above 24 cu. ft. Capacity)
- SECTIONAL REACH-IN REFRIGERATORS
- ZERO SECTIONAL REFRIGERATORS
- COMMERCIAL SHARP-FREEZERS
- SECTIONAL WALK-IN REFRIGERATORS
- COMPLETE PORTABLE LOCKER PLANTS

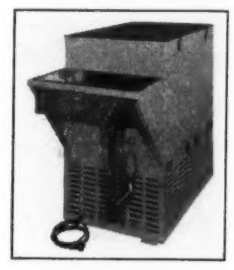
If you are a qualified purchaser, avoid disappointment by placing your orders early.

WILSON CABINET COMPANY
SMYRNA ~ DELAWARE

TEMPRITE

for 1943

PHOTOGRAPHIC PROCESSING EQUIPMENT
INSTANTANEOUS LIQUID COOLERS
REFRIGERATION ACCESSORIES



PHOTOGRAPHIC PROCESSING EQUIPMENT

Controlled Temperature Film and Print Developing Equipment.
Cooling Units for X-Ray Developing Tanks.
High Speed Film and Print Drying Equipment.
Controlled Temperature Photographic Processing Sinks.

WATER COOLING

Water Coolers (Instantaneous and Storage Types). Wall and Pedestal Fountains. Soda Fountain Water Coolers. Cabinet Water Coolers. Air Conditioning Water Coolers. Industrial Water Coolers.

VALVES

Suction Pressure Valves. Two Temperature Valves. Hi-Side Float Valves. Water Regulating Valves. Air Relief Valves. Beer Line Temperature Valves.

REFRIGERATION ACCESSORIES

"Oilrite" Oil Separators. Adaptor Blocks. Accumulator Heat Exchangers. Equalizer Tanks. Draught Beer Cooling Equipment.

FAUCETS

Foam Control Refrigerated Beer Faucets. Standard Refrigerated Beer Faucets. Standard Beer Faucets.

MISCELLANEOUS COOLING

Acid Cooling Units — Oil Cooling Units
Spot Welder Cooling Units
Chemical Cooling Units
Carbon Brazing Machine Coolers

NOTE: Equipment listed will be sold only in line with existing Government regulations as they apply to the various types of equipment.

Inquiries on special equipment for essential war and industrial applications welcomed

TEMPRITE PRODUCTS CORPORATION

Originators of Instantaneous Liquid Cooling Devices

41 PIQUETTE AVENUE DETROIT, MICHIGAN

Cooling Equipment for U. S. Navy Must Withstand 'Tough' Usage

Officer of Bureau of Ships Tells Wherein the Units on 'Fighting Ships' Are of a Special Nature

NEW YORK CITY.—Problems in the details of refrigeration installations on U. S. Navy vessels, a discussion of some present and future problems on equipment design, and an explanation of why present designs must remain pretty well frozen, highlighted the talk "Refrigeration Installations Aboard Naval Vessels," given by Capt. T. J. Bay of the Bureau of Ships, U. S. Navy Department, at the recent annual meeting of the American Society of Refrigeration Engineers.

The service conditions under which this equipment operates are generally much more severe than apply to the average refrigeration installation ashore, Capt. Bay pointed out. Thus it is necessary that the finest equipment commercially available be employed and that certain components of each naval refrigeration system be specially designed to meet these severe service operating conditions in order that maximum service reliability will be obtained.

Reliability First

The importance of reliability under service operating conditions is explained when consideration is given to the fact that proper operation of all naval shipboard refrigeration installations is vital to the military effectiveness of the vessels as distinguished from installations made for comfort or convenience. This applies to all naval refrigeration installations, including cold storage refrigerating plants, process water cooling plants and air conditioning or air cooling plants. The machinery installation for a typical cold storage refrigerating plant aboard a combatant naval vessel usually includes two or three identical compressor units.

Under operating conditions in the tropics, stated the speaker, it will be recognized that a single larger compressor unit would handle the load more efficiently, and that various capacity control means are available for adjusting this larger machine to meet light load operating conditions.

So—Multiple Units

However, the provision of a multiple compressor unit installation provides for subdividing the refrigeration load between compressors so that a casualty to one machine, or two machines in the case of a three-compressor unit installation, will not leave the vessel entirely without cold storage refrigeration. Thus, a compromise is made between the most efficient installation from the standpoint of weight, space and power input, and the necessity for maximum service reliability of the refrigerating plant.

It was pointed out by Capt. Bay that refrigeration compressors for naval shipboard installations vary from high grade commercial practice less than other parts of the refrigeration system such as motors, motor controllers, refrigerant condensers, piping systems, etc. The electrical equipment must be designed to withstand the tremendous shock associated with gun fire, underwater attack and bombing attack to which the vessels will be subjected during the normal performance of the missions for which naval combatant vessels are designed.

In addition to the stresses imposed by these unusually heavy shocks, which occur at relatively infrequent intervals, all refrigerating equipment must successfully withstand the more or less continuous vibration associated with high power operation of the main propelling machinery of the vessel.

The Worst in Vibration

This vibration is much more severe than might be anticipated by those unfamiliar with actual conditions encountered aboard high powered naval combatant vessels. For instance, if a parallel were drawn in this connection between a naval vessel and a railway locomotive pounding over the rails at express train speed, one might expect more severe vibration and shock for the latter. However, high pressure steam piping unions, which remain tight indefinitely on locomotives, were tested aboard Navy destroyers and found absolutely incapable of withstanding the severe conditions met with in service.

A leak in the refrigerant piping system installed aboard naval vessels is obviously of more serious concern than in the case of shore applications, as the supply of refrigerant carried aboard must be reduced to a bare minimum in order to conserve storage space and keep weight at a practicable minimum.

Weight limitations, of vital importance for all shipboard mechinery, are particularly severe in the case of relatively small high speed naval vessels, such as destroyers, where speed and maneuverability constitute practically the sole defensive characteristics of the vessels, and are equally essential in connection with offensive operations.

High speed and light displacement are inseparable, and all means of reducing the weight of the necessary equipment must be adhered to. Thus, a tight, leak-proof refrigeration piping installation must be provided and reserve refrigerant stowage reduced to the minimum practicable quantity.

Capt. Bay declared that the refrigerant piping system finally developed by the Navy in cooperation with the industry as most suitable to meet the service conditions associated with vibration, shock, corrosion, tightness, light weight and adaptability to restricted shipboard space conditions, has resolved itself into the employment of light-weight copper tubing with forged or swaged fittings and silver-soldered joints. Flanged joints are reduced to a minimum as a weight-saving measure and silver-soldered joints are regarded as breakable joints from the standpoint of maintenance and repair operations.

Type of Joints Used

Silver brazed or soldered piping joints are particularly adaptable to naval vessel refrigerant systems where the system refrigerant leads must be run through confined spaces and around various obstructions, because these joints can be satisfactorily broken and remade within these confined space restrictions without the necessity of providing space completely around the joints as would be necessary were welded or flanged joints employed.

Threaded and flared joints have been found less reliable than silver brazed joints under severe service conditions, and their use is avoided insofar as possible, although it has been found necessary to make limited use of flared joints in the smaller sizes for making the initial connection to delicate instruments, pressure gages, automatic switches, etc. Properly installed refrigerant piping systems constructed in accordance with these general principles have been found quite satisfactory from all standpoints for naval vessel installations, and it is probable that the light weight, strength, and flexibility of this type of piping system is largely responsible for its high resistance to shock and vibration the speaker said.

One of the most important differences between commercial refrigeration practice and naval shipboard requirements, as pointed out by the speaker, the necessary use of sea water for the refrigerant condenser cooling medium, in the average plant too large for an air cooled condenser. On several occasions it has been expedient in an emergency to employ ordinary commercial water cooled condensers for temporary naval shipboard installation, and this usually resulted in a condenser failure within a few days after installation, although the same condenser installed ashore, using well water or domestic water supply, would probably have given trouble-free service for several years.

The Navy on Condensers

It will be realized, said Capt. Bay, that the Navy knows more about how to handle corrosion and erosion problems connected with the use of sea water as a condenser circulating medium than any other activity, and it is natural that the Navy's requirements for refrigerant condenser construction reflect this knowledge gained through years of experience.

Current naval practice makes use of copper nickel alloy condenser tubes and tube sheets, and gun metal water chests. With this construction, and proper attention to design considerations connected with water flow, it is not uncommon with water flow, it is not uncommon to obtain a useful life of many years without leakage or unusual service deterioration.

The excellent service experience being enjoyed by the Navy at present in the use of shipboard refrigeration equipment is not accidental but is rather a product of the care and attention given every detail connected with the design, installation, operation and maintenance of refrigeration equipment for years past, the speaker asserted. In view of this background of experience, it has been found essential to investigate thoroughly and test all new developments prior to incorporating changes in the present systems, whether they be applicable to cold storage refrigeration plants, process water cooling plants or air conditioning plants.

The atmospheric conditions that prevail aboard a warship have an important bearing on the health and morale of the crew, and therefore the maintenance of satisfactory inboard air temperatures is a naval necessity, said the captain.

Shipboard tests have demonstrated that personnel can work effectively and efficiently in extreme atmospheric conditions over extended periods of wartime cruising, so long as there is a reasonably comfortable place in which to relax when off watch. A sailor's duties in war are varied, and often his free time is broken up by extra duty or alerts. Consequently, it is doubly important that living space conditions are conducive to adequate rest.

Living spaces are now cooled by means of ventilation, i.e. fresh air is circulated through a vessel to provide cooling in the same way jacket water cools an engine or fresh-air cools an automobile radiator. Of course, the temperature of the ventilation air increases as it passes through a ship, and inboard conditions are usually about 10° above topside temperatures.

Fresh air in the tropics may be as high as 90 dry bulb and 80 wet bulb for weeks on end, and under such conditions it is impossible to maintain satisfactory temperatures in living spaces with ventilation only.

Air Cooling Too Heavy

Air conditioning, or more accurately mechanical cooling, is the only answer; but, regardless of its desirability, it is not generally applied because of concern over the dependability of the equipment and the resultant increased weight, the speaker declared.

As noted before, some types of battle damage produce tremendous accelerations that shatter brittle materials such as cast iron, and destroy fittings that are either too rigid or too flexible. A recent comparative study showed that the use of a single unit air conditioning system for a group berthing space would result in a weight increase of 88% over that required for ventilation.

Although this would result in satisfactory temperatures whereas ventilation will not, the necessary weight increase is absolutely unacceptable. The application of air conditioning to living spaces aboard warships must await the development of equipment that can compete in dependability, and compete more favorably in weight and space requirements with the present ventilation systems.

A few vital control spaces on the larger vessels are air conditioned by self-contained units to maintain efficient working conditions, and to permit these compartments to be positively sealed from any source of fire or flooding damage. Dual units are provided to give dependability; but each is selected to maintain a barely habitable condition—such as

(Concluded on Page 25, Column 1)

AT
"VIRGINIA"
JOBBERS
Everywhere

LOW PRESSURE REFRIGERANTS
FOR EVERY
COOLING APPLICATION

"VIRGINIA" REFRIGERANTS
AGENTS FOR KINETIC'S "FREON-12"
VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

Gilmer BELTS

Industry at war is finding more and more uses for refrigeration and conditioned air. That means there's plenty of sales and service opportunities for men who'll go out and scratch for them.

Gilmer Belts can help you . . . for their strength and stamina make Gilmer Belts a "natural," wherever smooth, dependable pulling power is desired. Order through your jobber . . . he can fill your requirements promptly.

L. H. GILMER COMPANY
Tacony, Philadelphia, Pa.

Navy Develops Novel Methods To Reduce Space of Its 'Twin Unit' Installations

(Concluded from Page 24, Column 5)

103 dry bulb and 85 wet bulb—as a means of reducing the required tonnage, and thus reducing the necessary weight and space.

The controls of these units are adjusted for comfortable temperatures, instead of the designed values, and the use of both units simultaneously will provide sufficient total tonnage to maintain low temperatures at any time. Inasmuch as the selection is based on the battle load, one unit is usually capable of maintaining comfortable conditions whenever the crew is not at battle stations.

However, each of the two units must be designed and installed to satisfy the emergency condition, which is maximum load with a casualty to one unit, with a minimum weight.

Design Changes Delay

A further saving of weight and space is possible by installing the evaporator coils of these two units in series within the ventilation duct, instead of in parallel. A definite quantity of air is required to satisfy the designed emergency condition for each coil.

If these coils are installed side by side (parallel), the total air volume would have to be twice this required quantity; however, if they are installed one after the other (series) so that the same air passes over both coils, the total fan capacity will be equal to the volume required for one coil. This arrangement requires greater fan pressures, and also results in a greater differential between supply air and space temperatures, but both of these factors are preferable to increased space and weight requirements.

Navy standard fan characteristics are such that the extra pressure in a short recirculation system will usually result in better performance; and the healthy, male operating personnel is not bothered by the resultant temperature differential if adequate diffusing arrangements are provided in the air discharge terminals.

Air conditioning, or refrigeration, is also provided for some types of stowage spaces where a definite maximum temperature must be maintained, and where the boundary piercings required for ventilation are unacceptable. Dual compressor units are installed to provide dependability, and dual coil installations are fitted in each space served.

Spaces are grouped conveniently for cooling with due regard for compartmentation and probable damage. Gravity evaporator coils installed in the overhead are generally used for this type of service.

The capacity of each set of coils is chosen for a maximum permissible temperature as a weight saving expedient. Thus, a manufacturer may be requested to "refrigerate" a space to 90° F. The control thermostats are set at a much lower temperature, which can usually be maintained by one unit except when the ship is operating at maximum power in the tropics or in battle condition.

Considerable difficulty has been experienced with evaporator coils furnished for air conditioning installations, according to Capt. Bay. The manufacturers vary widely in their coil selections for a given job, and it has been necessary to replace some coils in order to develop the maximum tonnage of which the compressors were capable. Evaporator coil workmanship has often been disappointing, in that tube and fin reach a parting of the ways oftener and quicker than one would be led to believe from propoganda broadcasts. Cleanability and anti-fouling characteristics are also important.

The Navy is now conducting an investigation to determine the acceptability of various types and to develop a standard for naval applications. The purpose of this study is to provide satisfactory installations and to insure a maximum output per pound of equipment.

Test work in connection with refrigeration is being necessarily decreased to a bare minimum under the present emergency, it was explained. Changes in established designs must be eliminated to the greatest possible extent in order to provide for maximum speed in the production of ships.

Coils In Series

Even a relatively small change in the design or arrangement of the refrigerating systems installed in a class of naval vessels may be responsible for confusion and delay in the shipbuilding yards, and is, therefore, generally not acceptable except when absolutely necessary to provide for essential improvement in the military effectiveness of a vessel.

Refrigeration equipment plays a vital part aboardship in a wide variety of ways, all important to the maximum war effort, from powder and powder bags to guns and their control equipment. In this war, he said, we have not only to transport men and war material to the far corners of the earth but we must also maintain a continuous supply of food for the forces landed on foreign soil.

"It is your privilege to be closely associated with the production of equipment vital to the effective prosecution of the war," said Capt. Bay in closing. The production forces at home are fully as important to the ultimate successful conclusion of the present conflict as are the armed forces in the field which we serve. I congratulate you on the success which is crowning the efforts of the refrigeration industry in producing in ever-increasing quantities the excellent refrigeration equipment so vital to many phases of the war effort.

Ice Industry Warned To Conserve Trucking

CHICAGO—The ice industry must take immediate steps to conserve trucking equipment or "find itself without delivery facilities" Jack Garrett Scott, general counsel for the Office of Defense Transportation told the National Association of Ice Industries here recently.

After reviewing difficulties met while trying to work out an overall plan of joint action for the industry, Mr. Scott suggested that companies in several representative communities work out cooperative plans for conservation to serve as "guinea pigs" for other organizations.

"Their ultimate approval, disapproval, or modification will provide yardsticks by which the rest of the industry can be guided," he explained.

Mr. Scott warned the group however that conservation in use of tires and automotive equipment was the object of such plans and that approval would not be forthcoming for programs which under disguise of eliminating transportation wastes sought to establish monopolistic control or otherwise change the economics of the industry.

Berwanger Joins May Store In Baltimore

BALTIMORE — Louis Berwanger, formerly salesmanager with the radio and electric appliance department of Baltimore Gas Light Co., has been appointed appliance and radio manager at the May Co. here.

'How To Keep Fit In Cold Homes' Forum To Feature ASH&VE Meeting

NEW YORK CITY—The 49th annual meeting of the American Society of Heating and Ventilating Engineers will be held Jan. 25-27, 1943, Hotel Gibson, Cincinnati.

The meetings committee of the A.S.H. & V.E. has prepared a streamlined program which includes subjects of wartime interest, such as fuel conservation, food dehydration, manpower problems, warship ventilation and physiological studies affecting efficiency and health. A special panel discussion of the subject, "How to Keep Fit in Cold Homes" will be a feature of one session.

Four technical sessions will be held, commencing on Monday morning, Jan. 25, and there will be several research papers covering studies of heating plant operation with reduced night temperatures, resistance of various building materials to vapor transmission, and performance of air duct outlets.

The members of the Cincinnati chapter will be hosts for the occasion and the Committee on Arrangements has announced three outstanding social functions: First, a joint meeting with members of the Cincinnati Engineers' Club at noon on Monday; a get-together dinner and ice show on Monday evening, and the annual banquet on Tuesday evening.

The members of the Committee on Arrangements are: W. C. Green, honorary chairman; Albert Buenger, general chairman; A. L. Hard, vice-chairman; G. V. Sutfin, secretary; W. H. Junker, finance; K. A. Wright, publicity; Mrs. G. B. Houliston, ladies; I. B. Helburn, banquet; G. B. Houliston, entertainment; H. E. Sproull, reception; W. W. Edwards, transportation; and M. E. Mathewson, inspection trips.

January 25

9:30 a.m. Technical Session: "Warship Ventilation System Design," by Urdahl and Whittlesey. "Modern Methods of Food Dehydration." Report of Tellers.

12:15 p.m. Get-together Luncheon —Speaker, Dr. B. M. Woods, U. of Calif. "The Manpower Problem in Engineering."

2:00 p.m. Technical Session: "Army Fuel Consumption Studies," by McCabe, Konzo, and Biller. "Performance Characteristics of a Coal-Fired Space Heater," by R. C. Cross. "Residence Heating Operation with Reduced Night Temperatures," by Kratz, Harris and Fahnestock.

6:30 p.m. Dinner and Ice Show.

January 26

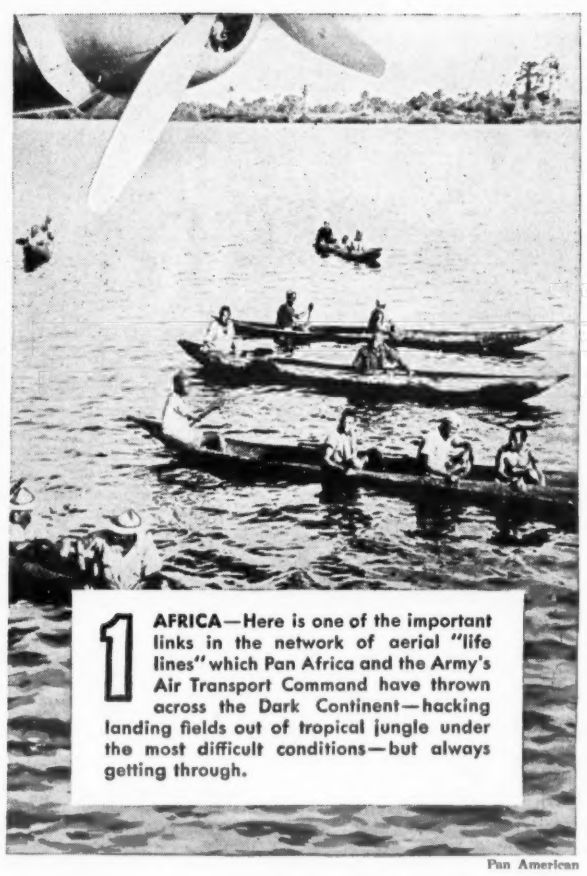
9:30 a.m. Technical Session: "Comparative Resistance to Vapor Transmission of Various Building Materials," by L. V. Teesdale. "Summer Comfort Factors as Influenced by the Thermal Properties of Building Materials," by Mackey and Wright. "Friction Heads, Due to Water Flow in Copper, Brass and Other Smooth Pipes," by F. E. Giesecke. "Performance of Side Outlets on Horizontal Ducts," by Nelson and Smedberg.

2:00 p.m. Technical Session: "Panel Discussion—How to Keep Fit in Cold Homes," conducted by Dr. C.-E. A. Winslow.

7:00 p.m. Annual Banquet — Installation of Officers: Presentation of Past President's Emblem.

PENN BRASS & COPPER COMPANY, INC.
POWELL AVE. ★ ERIE, PA.
Seamless Brass and Copper Tubing

FAMOUS LIFE LINES



1 AFRICA—Here is one of the important links in the network of aerial "life lines" which Pan Africa and the Army's Air Transport Command have thrown across the Dark Continent—hacking landing fields out of tropical jungle under the most difficult conditions—but always getting through.

Pan American

2 MARINE CORPS "CROCODILES" have landed and have the situation well in hand, with their loads of reconnaissance trucks, tanks and scout cars, all with life lines — oil lines, fuel lines, brake lines, and many other tubing parts — made of Bundy Tubing.

Official Photograph U. S. Marine Corps

AT LAST, the "battle of production" is bearing its deadly fruit. At last, the flood of American-made weapons and equipment is making itself felt in combat on every front and continent.

Each day brings new stories of heroic action. Of tanks, jeeps, trucks and guns. Of bombers, fighters, transport planes and parachutes. Of submarines, PT boats, mine sweepers, carriers and destroyers.

It is a source of pride to us that Bundy life lines, of Bundy Tubing, are on the job in all these — and many more of America's fighting units.

Wherever fuel or lubrication lines are needed, wherever hydraulic pressure or refrigerants must be transmitted, or wherever mechanical or structural tubing is required, Bundy Tubing fills the need. Bundy Tubing Company, Detroit, Michigan.

Official Photograph U. S. Army Air Forces

GLIDERS—War demands have added many sizes and types of tubing to the Bundy line. Among them is a structural tubing for gliders which is already winning favor among manufacturers of this new and important addition to American air forces.

Buy U. S. War Bonds — Get in Your Scrap

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS

BUNDYWELD double-walled steel tubing, hydrogen-brazed, copper-coated inside and outside. From Capillary sizes up to and including 1/4" O. D. This double-walled type is also available in steel, tin-coated on the outside, and in Monel.

BUNDY ELECTRICWELD steel tubing. Single-walled — butt welded — annealed. Available in sizes up to and including 2" O. D. Can be furnished tin-coated outside in smaller sizes.

BUNDY "TRIPLE-PURPOSE" tubing. Double-walled, rolled from two strips, joints opposite, welded into a solid wall. Available in all Monel; all steel; Monel inside—steel outside; Monel outside—steel inside. Sizes up to and including 5/8" O. D.

Refrigeration Problems in the Design of 'Strato-Chambers'

J. G. Bergdoll of York Details the Engineering Installation & Operating Factors in Such Systems

NEW YORK CITY—Stratosphere fighter planes battling eight miles above the earth may soon become a reality through the aid of giant steel "sky chambers" which are now making it possible for the first time to study the effects of super-altitude and sub-zero temperatures on men and materials, it was revealed in an address before the annual meeting of the American Society of Refrigerating Engineers by J. G. Bergdoll, Jr., chief engineer, York Ice Machinery Corp., who described how the steel "strato-chambers" are enabling U. S. military to simulate stratosphere temperatures and pressures which hitherto have been found only in actual flight.

Mr. Bergdoll said the test chambers demonstrated that at certain altitudes rubber becomes as brittle as glass and that pilots when subjected to rapid increase in altitude, become victims of "aeroembolism," the same ailment which deep sea divers call the "bends." About 42,000 feet is the ceiling above which humans cannot go, he added, without pressurized suits or sealed cabins.

The dangerous obstacles which have made flying at altitudes as high as 40,000 feet impractical are now being studied and gradually eliminated in the test chambers and "it is not impossible that air battles will be fought eight miles above the ground," Mr. Bergdoll pointed out.

"Tests in the strato-chambers demonstrated the loss of physical and mental efficiency of the flight crews unless they were fed oxygen above about 15,000 feet altitude; disclosed that sleep or unconsciousness occurred at about 20,000 feet and that death from Anoxemia or oxygen shortage occurred above this altitude if oxygen masks were not used," Mr. Bergdoll explained.

The chambers make it possible for the first time to simulate the effects of a dive bomber tearing to earth at a speed of a 1,000 feet a second, the engineer said. In one chamber, used for diving and climbing tests, the atmospheric pressure inside must change from that found at sea level, about 14 pounds per square inch, to less than two pounds per square inch encountered at about nine miles above the earth. This, plus a drop in temperature from 70° to —67° F. is accomplished in 12 minutes.

Such strato-chambers are steel cylinders approximately 22 feet long resembling in appearance the complicated interior of a submarine. The interior is divided into two chambers separated by an air tight steel door. Major equipment includes refrigerating compressors which provide the sub-zero temperatures, and several vacuum pumps required to reduce the air pressure to stratospheric conditions.

What Takes Place Inside

Space for six men in flying clothes is provided in the inner chamber or "climb chamber," Mr. Bergdoll explained. After the test subjects have been seated, the vacuum pumps and fans are started and the dampers admitting cold air to the climb chamber are opened. A sufficient reservoir of refrigeration is built up to reduce the temperature within the climb chamber to —70° F. in 12 minutes. Oxygen masks supplied from the outside and electrically heated suits protect the subjects.

Weather conditions eight miles above the ground produce problems never found in every-day flying, Mr. Bergdoll explained. Although the temperature usually remains constant at —67° F. at an altitude around 35,000 feet, atmospheric conditions and locale may cause variations from —60° to as low as 100° below zero.

Coupled with these extremely low temperatures are very low air pressures and densities. These extreme pressures and temperatures seriously affect the efficiency of both the plane and the operating personnel. For example, a glycerin and water mixture can have a freezing point of approximately —40° F.; aircraft hydraulic fluid freezes at —50°; even gasoline will freeze at —90°. Rubber becomes as brittle as glass at stratospheric conditions. As for the pilots, they cannot exist long without the safeguards of heated suits, oxygen masks, and at higher altitudes even pressurized suits or cabins.

It is estimated at the present time that at 0° F. temperature a pilot's efficiency is reduced 13% due to the need for heavy gloves and other clothing. And at —40° F. it is estimated that his efficiency is only about 20% of normal due to the numbing effect of cold. Heating of cabins is not generally successful due to the rapid formation of frost on the windows.

Therefore, it was even more important to know just how the flying crew is affected by low temperatures or by rapidly changing temperatures; and hence the "strato-chamber" or refrigerated altitude test chamber.

Early Models

First of such chambers was installed at the Banting Institute in Canada by the Canadian Ice Machine Co., Ltd. It consists of an insulated vacuum chamber installed in an insulated room held at about —20° F. to —35° F. Vacuum equipment to evacuate the chamber to simulate altitudes of about 45,000 feet is provided. The refrigeration equipment is capable of producing a temperature of approximately —67° F. within the chamber. Ammonia is used as the refrigerant and the evaporator coils are installed external to the test chamber with an air tight duct system between the test chamber and coil chamber.

Second of these strato-chamber installations was installed for the U. S. Army Air Corps. This department of the Air Corps has been conducting pressure altitude tests for years, but found that for complete studies it was necessary to control temperatures as well as pressures.

This installation differed from the Canadian one in that the evaporator coils are placed around the inside perimeter of the shell. The chamber is 8 feet in diameter by about 15 feet long, with about 4 feet of the length occupied by an air lock to permit entrance to and exit from the main test chamber during tests. This is the first chamber in which any attempt was made to simulate plane climb.

The cooling time was designed to simulate plane flight from ground level to 45,000 feet at the rate of 1,000 feet per minute. This means that in 45 minutes the pressure is reduced from that at sea level—14.7 pounds per square inch to almost nothing—2 pounds per square inch absolute; and the temperature from atmospheric, say 70°, to —67° F. This installation is a "Freon-12" cascade refrigeration system with thermal expansion valve feed to the evaporator.

The last of what might be called the preliminary strato-chamber installations was made at the plant of a large aircraft company. This is a much larger installation than either of the others and its original purpose was principally for testing superchargers and other plane parts for high altitude planes which were being built at this time.

Special Room to Test Parts

In addition to the strato-chamber, where both pressures and temperature are controlled, this company installed a cold room for temperatures of —70° F. for temperature testing alone. This room is cross connected so as to use the same high side equipment as is used in the strato-chamber. The refrigeration installation is a compound system with a capacity of about 9 tons of refrigeration at an evaporator temperature of about —85° F. Other than two ar three test chambers using dry ice for low temperature testing and which were not designed for continuous duty at extreme low temperatures, this last described installation is the first and most complete test setup to be made up to that time.

At about the same time the above installations were being made, the government, realizing the need for additional physiological testing facilities appropriated funds for several strato-chambers at educational and health institutions where both engineering and medical talent were available for research work. Because a number of these chambers appeared to be for the same purpose, everyone interested in this program was consulted so that a strato-chamber could be designed to meet all test requirements. These conferences led to the conclusion that the following test conditions should be met:

Test Conditions Prescribed

1. Pressure. Vacuum equipment should be of sufficient capacity to reduce the pressure inside the chamber from that at sea level to the low pressure existing at 45,000 feet altitude in from 4 to 4½ minutes. It should maintain pressure equivalent to that at 45,000 feet altitude with a fresh air "bleed" into the chamber of approximately 10 cubic feet per minute. This 10 c.f.m. of fresh air is necessary for ventilation, since oxygen masks are in continuous use inside the chamber and the oxygen concentration there is high. The vacuum pumps equipment should be lubricated and sealed to handle air of high oxygen concentration without any danger of explosions.

2. Temperature. Refrigeration equipment should be designed to reduce the temperature within the chamber from normal atmospheric conditions (70° F.) to —70° F. in not more than 12 minutes, parelleling the reduction of pressure from sea level to that of 45,000 feet altitude. It should also be of sufficient capacity to hold the —70 F. temperature after the 45,000 feet altitude condition has been reached.

3. Size. The chamber should be large enough to accommodate six men in flying clothes.

4. Refrigerating Capacity. The refrigeration capacity should be sufficient to obtain the rapid temperature reduction above and maintain —70° F. inside the chamber with the following internal heat load: a. Six men in electrically heated suits. b. 500 watts of light. c. 10 c.f.m. of ventilation air. d. Approximately 1 kw. of motor load.

To meet pressure requirements and to hold a temperature of —70° F. within the chamber did not present any real problem. This had already been done in the three installations previously made. However, to produce the rapid temperature reduction necessary to simulate a plane climbing into the stratosphere—and still furnish reasonably-sized refrigerating equipment—presented a real problem.

To L. R. St. Onge, York branch engineer at Philadelphia, said the speaker, must go the credit for the idea behind the design of a typical York strato-chamber for physiological research. The chamber is divided into a "lock" approximately 4 feet long and a main chamber approximately 18 feet long. Inside the main chamber an insulated "climb" chamber is constructed with space on one side for the refrigerant coils and a plenum space between the "climb" chamber and main chamber for circulation of air. By means of dampers the climb chamber can be completely isolated from flow of air from the refrigerated space.

Refrigeration is supplied by a two-stage "Freon-12" system operating at —85° F. suction temperature; evaporator coils are fed from a "Freon-12" liquid circulating pump, which insures continually effcient coil operation without danger of liquid "slugs" to compressor.

Major accessories consist of the fresh air drying unit, oxygen cylinders for supplying oxygen to masks, vacuum pump for evacuating chamber and the refrigeration machinery.

Cycle of Operation

Cycle of operation is as follows: The climb chamber is opened to the refrigerated space with fans in operation and the refrigerating equipment operated for a sufficient length of time to pull all the heat out of the coils, shell, insulation, etc. This takes from 15 to 20 hours. During the last sevral hours fans are not operated and air flows by gravity down through the coils and up through the climb chamber, back to the coils. The coils and shell are cooled to a temperature of —90° to —100°, which is considerably below the final temperature to be produced in the climb chamber.

At the end of this preliminary cooling period the climb chamber is isolated from the cooling circuit and heated up to normal atmospheric conditions by means of electric heaters. The chamber is then ready for the test period.

After the test subjects have been put into the climb chamber, the vacuum pumps and fans are started and the dampers admitting cold air

(Concluded from Page 27, Column 1)

REFRIGERATION Service

MUST GUARD THE NATION'S HEALTH

OUR 144 PAGE CATALOG LISTS EVERYTHING NEEDED FOR REFRIGERATION SERVICE. SEND FOR YOUR COPY ON YOUR LETTERHEAD

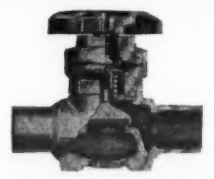
THE HARRY ALTER CO.
1728 S. Michigan Ave. Chicago, Ill. — Two Big Warehouses to Serve You — 134 Lafayette St. New York, N.Y.

Superior PRODUCTS ★ ★ ★
★ ★ ★ FOR YOUR Defense JOBS

Increased refrigerated space for the accelerated production of perishable foods places a heavy responsibility upon the refrigeration industry. Shortage of metals condemns waste and inefficiency. Do your part to conserve materials. Design to produce more refrigeration per watt hour. Select equipment which requires a minimum of service. Specify SUPERIOR — the quality buy-word of the industry.

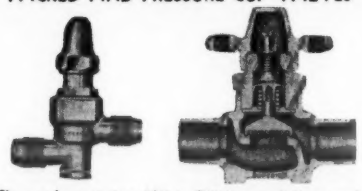
CUT

DIAPHRAGM PACKLESS VALVES



Entire internal assembly removable for soldering or inspection. Equipped with famous pressure cup below diaphragm. Two and three way. Flare sizes ¼" to ¾"; Sweat sizes ¼" to ⅞".

PACKED AND PRESSURE CUP VALVES



Flare and sweat sizes ¼" to ⅜" (two and three way) have hex seal cap. Sweat sizes ¼" to 2⅛" (globe) have wing nut seal cap. Internal assembly (all sizes) removable for sweating to valve body.

★ Refrigeration is Vitally Essential to Our National Defense Efforts ★

OUT AND SAVE

CHECK VALVES

Very sensitive springs. Less than 5 ounces pressure drop. Positively will not chatter or hum. All internal parts easily removable for sweating or inspection. Sizes ⅛" to ¾" Flare; ¼" to ⅞" Sweat.

LIQUID INDICATORS

With or without seal cap. Flare sizes ¼" to ⅜"; Sweat sizes ¼" to 1⅜". On ½" Sweat to 1⅜" entire upper assembly may be removed as a unit to facilitate soldering of refrigerant lines to connections.

★ Refrigeration-Food Preservation and National Defense are Synonomous ★

FOR FUTURE

DEHYDRATORS

Silica-Gel or Activated Alumina. Refillable and non-refillable. ¼" to ⅝"; ¼ to 5 H.P.; 2 to 60 cubic inches.

MANIFOLDS

With packless or seal cap valves. Two to six valves; ¼" to 2⅛" valves, with or without end fittings. Sweat or flare.

FILTERS

Highly efficient sack type filter. Sizes ¼" SAE to ⅝" SAE. One to five horsepower.

★ Don't take chances with the Nation's Health--do the best job possible ★

REFERENCE

FITTINGS

Unions, adapters, elbows, tees, crosses, caps, etc. ⅛" through 1".

HEAT EXCHANGERS

Unique design gives highest capacity per unit size. Sweat or flare connections. 4200 to 9725 BTU per hour.

Combination Heat Exchanger and Accumulator. From one to ten tons. Especially recommended for low temperature installations.

FLARE NUTS

Brass and steel. Long and frost proof. Forged and bar stock.

★ For complete details—see your Jobber or write for catalog ★

SUPERIOR VALVE & FITTINGS CO.
★ PITTSBURGH ★ PENNSYLVANIA ★

Just Like Russia or 40,000 Feet Up

An engineer of the Wright Aeronautical Corp., masked against the cold, works on a storage battery connection for an ice-covered Wright Cyclone aircraft engine in one of the experiments carried out in a test cell simulating the sub-zero wartime conditions in Alaska, Iceland, Russia, and in the stratosphere. Research includes testing of engine parts, electrical equipment, fuels, and lubricants.

* * *

Special Problems in 'Strato-Chamber' Work Affect Nearly Every Part of Cooling System

Concluded from Page 26, Column 5)

to the climb chamber are opened. A sufficient reservoir of refrigeration has been built up to reduce the temperature within the climb chamber to —70° in 12 minutes or less.

In discussing the design calculations for this job Mr. Bergdoll said that a heat leakage factor of .1 B.t.u. per hour per °F. is used instead of the normal factor of .025 B.t.u. per hour per °F. This factor of .1 has been found by tests on actual installations and is therefore an empirical value to cover normal heat leakage, plus losses through the multitude of breakage through the insulation, plus the continued release of sensible heat from the mass of material. It has been established that even after considerably over 20 hours' operation the insulation mass had not reached equalibrium.

Course of the Refrigerant

In the cycle of operation the low-stage compressor takes its suction gas from the surge drum under the coils, discharges it through a double-pipe gas cooler to the suction of the high stage compressor, which in turn discharges it into the horizontal water-cooled condenser.

The liquid from the condenser flows to a "Freon" high pressure float and then to a 10 inch by 3 foot flash type liquid cooler, the gas from the cooler going to the high stage suction and the liquid going to the annular space of a double-pipe oil still. The liquid is finally discharged from the annular space of the oil still through a second high pressure float to the surge drum under the coils.

A portion of the warm liquid from the condenser is tapped from the first high pressure float body to an Alco thermal expansion valve, through which it is admitted to the annular space of the double-pipe gas cooler, and the resultant gas is piped into the suction line of the high-stage compressor.

A hermetically sealed liquid "Freon" pump circulates the refrigerant from the surge drum and through the coils from which the liquid flows back to the surge drum.

A full size bypass connection is provided from the low stage suction to the low-stage discharge. When starting to cool down from a warm start this low-stage machine is **not** operated until the suction pressure falls below 15 pounds gage. The high-stage compressor is motored for high suction pressures whereas the low-stage machine is not.

Of equal importance with the refrigerant cycle is the oil cycle, said Mr. Bergdoll. Oil levels must be properly maintained in both compressors.

The Special Problems

Many problems are encountered in this low temperature work which are new or at least are liable to be overlooked by the engineer whose training and experience has been primarily food preservation and air conditioning, it was pointed out by Mr. Bergdoll. He discussed these problems as follows:

Heat leakage load. Regardless of the type of insulation used on the chamber the heat loss should be calculated at about three to four times that which present data would indicate. This is because of the large numbers of places at which the insulation is pierced to accommodate the various connections made into the chamber. It is also probable that at these extreme temperature and vapor pressure differences the extension of presently known data is erroneous.

Any insulation placed within the shell should be constructed so that it can breathe so as to avoid being destroyed by the changes in pressure within the shell.

Compressor. Due to the extremely light density of the gas being handled in the low-stage compressor the suction valves and the springs which close them must be as light as possible. With suction valves of the ring-plate type in the top of the piston the closing springs may and should be omitted to obtain maximum capacity of the compressor. With volumetric clearance of 6% the volumetric efficiency of the compressor will be approximately 55%, but the increase in volume of the gas due to superheat must be taken into account also. At these extremely low suction gas temperatures the gas at the compressor will superheat to as much as 100° F.

Accompanying the superheating of the suction gas and due to the low heat carrying capacity of the light gas itself extremely high cylinder and crankcase temperatures may be expected. Oil cooling and even water cooled cylinders may be required if the compressor is a type which runs hot under normal operating conditions.

The oil used in the compressor must be one that is practically free, has a low pour point and will retain its lubricating qualities at relatively high temperatures.

The high stage compressor must be motored to the machine at normal air conditioning conditions. This is because of the load on it when pulling down from a warm standby condition. For the same reason the low stage compressor must be motored to one-half of that required by air conditioning conditions.

Evaporator Design

Evaporator. The evaporator is designed as much for its sensible heat carrying capacity as for its ability to pick up heat from the stratochamber. This is required for the storage of refrigeration during the preliminary cooling period. It must also be able to give up its stored refrigeration as rapidly as required to maintain conditions in the climb chamber. This is the reason for the selection of 1¼-inch pipe coils with 1-inch high spiral fins two per inch.

Gas friction through the coils must be almost non-existent so as not to penalize evaporating temperature. A friction loss of .075 pounds per square inch means the loss of 1° in evaporating temperature average within the range of —85° F. and —100° F. Hence the 1¼-inch pipe coils are divided into separate circuits none of which exceed 90 feet.

For the same reason static liquid heads must be avoided and hence the reason for pump recirculation and down-feed in the individual circuits.

Small orifices for liquid distribution must be avoided due to the possibility of becoming clogged with wax or other foreign material.

Fans. The c.f.m. of the fans, while selected to operate at high altitude (low pressure), will be the same at low altitude (normal pressure) and possibly low temperature. Hence the fans must be motored to operate safely under the latter conditions. The matter of low temperature, however, is a compensating feature, permitting considerable overload on the fan motor from a temperature rise standpoint.

Fan bearings should be sleeve-type oil lubricated with a light oil having a flow point not higher than —55° F.

Fan shafts should be made of 2% nickel steel to withstand shock loads under these low temperature conditions.

The type of fan normally used is the high speed backwardly curved blade fan.

Size of Piping

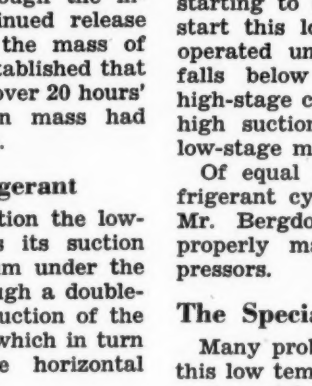
Refrigerant and oil mains. Low temperature suction gas mains should be sized for not to exceed .1 pound per square inch friction loss in 100 feet. This is to avoid evaporator temperature penalty. Intercooling between stages is essential to eliminate heat and obtain increased efficiency of the cycle.

A proven, reliable method of automatically reclaiming oil from the evaporator and maintaining the proper oil levels in the compressors must be provided.

General. Any motors operating within the chamber should be specially wound for low temperature operation. The usual motor insulation hardens and cracks under extreme low temperatures. Motors operating within the chamber should be explosion proof on account of the possible high oxygen concentration.

Gasket material such as used for the main doors, the instrument lock covers and the sight port glasses must not harden under low temperatures. We have found Goodyear's Chemigum to be satisfactory for this work.

TO OLD FRIENDS AND NEW THE *Ansul Family sends...*

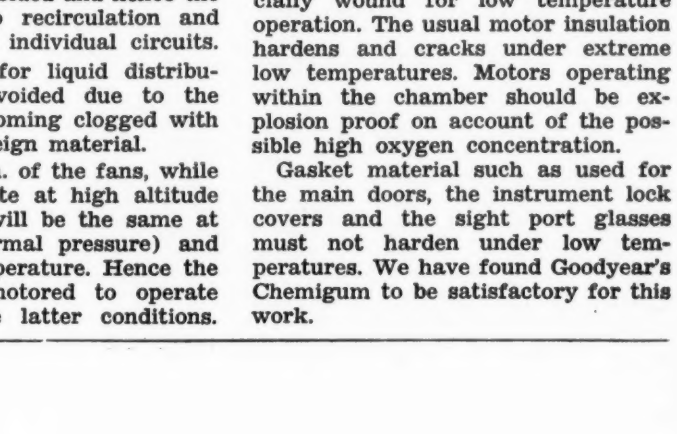


Holiday Greetings

ANSUL CHEMICAL COMPANY
SULPHUR DIOXIDE • ICE-X • METHYL CHLORIDE
MARINETTE, WISCONSIN AC

Is there a lesson here

FOR THE REFRIGERATION ENGINEER?



TAKE one cog off a gear, and the whole driving mechanism is in danger!

And that's the way it is with refrigeration and the war effort. Refrigeration is a vital cog in war production. Take it away and all-out production is endangered. Let needless breakdowns happen because of poor maintenance, and the processing and storage of essential food supplies —so important to the Allied Nations—may be impaired. It's a patriotic duty to keep your refrigeration equipment in first-class condition.

Here's a list of important points to have checked on your equipment:

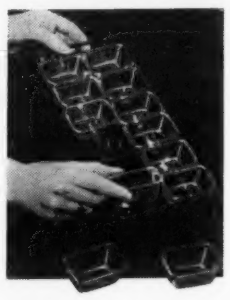
- Repair refrigerant leaks promptly.
- Check compressor oil level and clean filter screen regularly.
- Check belt alignment and tension.
- Clean condensers of scale and sludge.
- Keep valves ground to tight fit in valve seats to insure compressor's full gas-pumping capacity.

Have your service man make this checkup today, or call in a BAKER representative to do it for you.

Right now, BAKER is in the middle of a double-barreled program with two big objectives:

1. Build precision parts for the machines of war. Build into them the same accuracy, dependability, rugged endurance that is a by-word of other BAKER-built equipment.
2. Build dependable refrigerating equipment to keep food fresh—the food that keeps troops fighting, keeps civilian morale up.

BAKER
ICE MACHINE COMPANY, Inc.
1506 EVANS STREET OMAHA, NEBRASKA
SALES AND SERVICE IN PRINCIPAL CITIES
AUTHORITY ON MECHANICAL COOLING FOR 38 YEARS



YES-

You Can Get Ice Cube Trays For Your Trade!

THIS smart, new, streamlined SaniTRAY Ice Cube Maker replaces old style ice grids . . . and gives better satisfaction.

Individual, removable Ethocel Plastic Cups freeze large size cubes. Gentle fingertip pressure releases ice instantly.

No waiting No digging No water No prodding
No levers No prying No muss No shrinkage

One cube or a trayful may be had without the hand touching the ice.

Two SaniTRAY models fit 90% of present day refrigerators. Twelve cup tray retails at $1.95. Eight cup tray at $1.75. Extra cups in sets of twelve and six retail at $1.10 and .60 cents respectively.

SaniTRAY is the item you've been looking for to give new life to your appliance department. Good markup nets dealers a nice profit. Send for illustrated literature.

SWIFT MANUFACTURING COMPANY
247 McDougall Avenue • Detroit, Michigan

DOING ONE THING WELL

DEN

SYSTEM

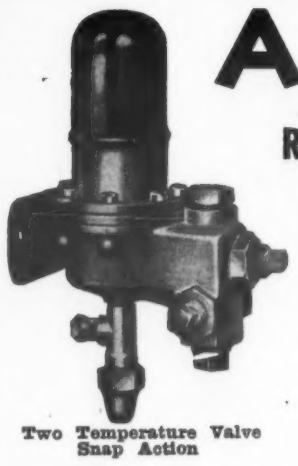
DEHYDRATORS — FILTERS — STRAINERS
HEAT EXCHANGERS

EFFICIENT — ADAPTABLE
ENGINEERED TO MODERN EXACTING REQUIREMENTS

McINTIRE CONNECTOR COMPANY
NEWARK, N. J.

AMINCO

REFRIGERATION APPLIANCES



Two Temperature Valve Snap Action

- Constant Pressure Water Valves
- Water Regulating Valves
- Starting Load Regulating Valves
- Two Temperature Valves (Snap Action)
- High Side Floats (Commercial)
- High Side Floats (Replacement, including Hermetic Type)
- Sure Dry Dehydrators
- Automatic Oil Separators

Automatic Oil Separator

The above items are available for the purpose of servicing the refrigeration needs of the Nation and we expect will be available FOR THE DURATION.

AMINCO Refrigeration Appliances are designed and manufactured to improve *any* installation, and in these days when 100% performance is expected of everyone it is good policy to install proven products.

All AMINCO appliances are made in the sizes required for service so that all commercial and domestic installations can invariably be serviced with AMINCO products.

Complete catalogue on request

AMERICAN INJECTOR COMPANY
1481 FOURTEENTH AVENUE, DETROIT, MICHIGAN
Pacific Coast: Van D. Clothier, 1015 E. 16th, Los Angeles, Calif.
Export: Borg-Warner International Corp., 310 S. Michigan Ave., Chicago, Ill.

Formula Established For Top Selling Price On Used Machines

WASHINGTON, D. C. — Calculation of maximum prices for used machines and parts was simplified Nov. 25 by the Office of Price Administration in Amendment No. 54 to Maximum Price Regulation No. 136 (Machines and Parts and Machinery Services).

OPA's action also changed and extended provisions of the regulation covering pricing of new machines, parts, and services.

Beginning Nov. 25, prices of used machines and parts will be based on the maximum price f.o.b. factory of the nearest equivalent new machine or part.

The amendment provides that for a used machine sold as "rebuilt and guaranteed," the maximum price f.o.b. the seller's place of business shall be 85% of that maximum f.o.b. factory price. Maximum price f.o.b. the seller's place of business for a used machine sold on an "as is" basis will be 55% of the factory price.

OPA explained that the maximum prices of used machines were previously determined by the delivery price of the new machine in the area of sale, allowing the maximum to vary with location. In addition to reducing this difficulty, OPA points out that the new method brings calculations in line with Revised Price Schedule No. 1 (Second-Hand Machine Tools) which has always used the f.o.b. list price basis.

To give substance to the "f.o.b. seller's place of business" provision, the amendment requires a seller to reimburse the buyer of any machine sold on the "where is-as is" basis for dismantling or loading costs up to 10% of the "as is" maximum price.

The amendment also expands "rebuilt and guaranteed machines" to include machines sold after so little use that no repair or replacement is necessary, and to include machines sold by government agencies with a certificate issued by a qualified person other than a dealer substituted for the usual 60-day guarantee that "all worn or missing components which should be replaced or repaired for satisfactory operation have been repaired or replaced."

Other changes in the regulation are:

1. Extending the pricing procedure for second hand machines and parts to other second hand items such as electrical wire, cable and cable accessories, gears, sprockets, and speed reducers.

2. Providing that actual prices can be used for all subcontracted services in determining maximum prices for machines or parts for which no published or confidential price list exists; for brick work or fabricated steel required for sales on an installed basis in computing prices of equipment sold on that basis; and for perishable tools and other devices charged to a job.

3. Changing and adding to the list of items covered by the regulation and priced at highest figures charged Oct. 1, 1941 "chemical process machinery," "electroplating and hot dip metal coating equipment," "heat exchange equipment, industrial," certain "open tanks and vessels," certain "pressure tanks," and "industrial power-operated devices for applying protective coatings or for the application of metals by spraying methods."

4. Providing that where federal, state, or local taxes are based on the manufacturer's cost of a machine or part the tax need not be stated separately.

5. Requiring price reports of new products that come under scope of the Regulation to be filed with OPA within 30 days after maximum prices are established.

Bulletin Offers Instructions On Belt Conservation

CHICAGO — "Twenty-three Ways to Conserve the Life of Your Multiple V-Belt Drives," a booklet prepared by the Engineering Research Bureau of the Multiple V-Belt Drive Association, has been written to educate power users in the proper procedure of selection, installation, and maintenance of V-belt drives in order to obtain the maximum life out of them.

Service Price Ceilings Must Now Include Ceilings (If Set) On Parts

(Concluded from Page 1, Column 5)

versely he may increase his charges in cases where the maximum prices of the commodities are fixed at higher than March levels by the other regulations governing them.

In either case, the service seller's charges for the actual service itself remain at the highest price he charged for the same service in March, 1942.

Following is an example of how the amendment works:

Mr. Brown, a service man, in March, 1942, replaced a gasket on an agricultural tractor, billing the purchaser separately $1 for the service and 50 cents for the part. Under the services regulation before the amendment was issued, Mr. Brown's ceiling for that service was $1.50.

But Maximum Price Regulation No. 133 (Farm Equipment) which governs the price for the gasket when it is sold independently uses a different base from that used in the services regulation, and may fix Mr. Brown's ceiling for the gasket at 40 cents. Therefore, under today's amendment, Mr. Brown must reduce the price he charges for the gasket itself to 40 cents, even when the gasket is part of a service. Accordingly Mr. Brown's maximum price for installing the gasket, including the part, is now $1.40 instead of $1.50.

On the other hand, if the farm equipment regulation fixed Mr. Brown's ceiling for the gasket at 60 cents, Mr. Brown could raise his price for the service, including the part, to $1.60.

Even if Mr. Brown did not bill parts separately during March the amendment still applies. If he made a flat charge of $2 for service of installation and a certain part in March, and if his price list showed the part at $1 or it was generally sold at $1 in March, then the fee for the service of installation above can be regarded as $1. Now, if another price regulation fixes his ceiling for the part at 85 cents when sold over the counter, he must reduce his flat rate for part and installation by 15 cents to $1.85.

In cases where the part involved in a service has its ceiling prices when sold independently fixed by the General Maximum Price Regulation, the amendment does not apply because the General Regulation also uses a March base date.

The text of the amendment follows:

Part 1499 — Commodities and Services. (MPR 165 as Amended,* Amendment 12.)

Services ‡ 1499.102 **Maximum prices for services—general provisions.** * * *

(f) The term "service" as used in this regulation includes any commodity or article sold in connection with the sale of a particular service. But where the price of a commodity (or article) sold in connection with a particular service is subject to any maximum price regulation which fixes a maximum price for the commodity higher than that allowed by this regulation, the maximum price for the service may be increased by the difference between the maximum price for the commodity under this regulation and that under the regulation specifically applicable to the commodity. Where, on the other hand, the maximum price for the commodity fixed by the regulation having specific application is lower than the price for the commodity permitted by this regulation, the maximum price for the service must be decreased in the amount of that difference.

Still Supplying
America's Finest Frosted Food Displayers
for essential food production
THE REDL
2308-10 Fredevick Avenue
BALTIMORE . MARYLAND

Weapons Against Waste

YOU CAN DEPEND ON

McCORD

HEAT TRANSFER SURFACES

THE ARMED SERVICES DO

Backed by 35 YEARS OF HEAT TRANSFER EXPERIENCE

V CHECK YOUR REQUIREMENTS HERE

1
Air Cooled and Water Cooled Condensers
—Sizes to meet every demand—Copper or Steel.

2
Evaporator Coils
—Blower Type or Natural Draft—for all purposes—Copper or Steel.

3
Spiral Finned Tubing
—Tube sizes from ¼" to 1" O. D.—Fin widths from 3/16" to ⅝"—Copper or Steel.

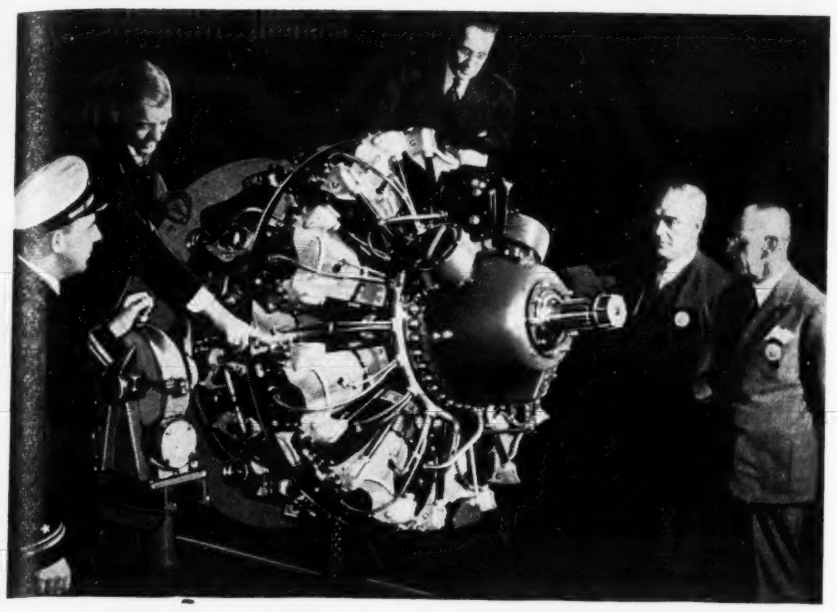
Check number of catalogs desired. Forwarded promptly.
1-2
3

Write today for catalogs or send specifications on your requirements. McCord Surface is engineered for economy and satisfaction.

Name _____
Street and City _____

McCORD RADIATOR & MFG. CO.
2587 E. GRAND BLVD. • DETROIT, MICH.

On the Nash-Kelvinator Assembly Lines



The first 2,000-hp. Pratt & Whitney aircraft engines to be built by Nash-Kelvinator Corp. have rolled off the assembly line in the company's rehabilitated automobile assembly plant in Wisconsin. Shown inspecting one of the engines, which will be used to power the Navy's new, high-altitude Corsair fighter planes, are Lt. K. M. Lord, resident Navy representative; Claus Anderson, chief liaison between factory and Navy; Harry Costley, factory manager; Pat Little, assistant to the general manager; and R. A. DeVlieg, general manager.

Inside Dope

(Concluded from Page 1, Column 1)

Hitler was unprepared to invade England in the summer of 1940 because he hadn't counted on the sudden collapse of Belgium and France. Likewise, we weren't prepared to move into Tunisia so fast.

As to the "morality" of dealing with Darlan, army men shrug their shoulders and say: "Well, he's a Franchman, isn't he?" You can take that remark several ways, and probably be right in all of them.

New Weapons

Watch American mechanical ingenuity have its effect on this war. "You haven't seen anything yet" some of the engineers tell us. The 105 mm. "tank killer" was the surprise weapon with which Montgomery knocked Rommel. The latter is probably as smart as he ever was, but tactical genius is sometimes no match for unexpectedly superior weapons.

American industry has achieved the miraculous in its super-rapid conversion to war production. Now watch it go on improving lethal weapons. First we had to get quantity—in a hurry. Manufacturers made what they were told to make. Now we'll strive for quality, and ingenuity.

Gold

Financial surprise of the times is the discovery that gold is selling at big premiums in foreign markets. This justifies the faith of the economists who have insisted that gold always makes a comeback, particularly after wars.

Maybe we have something in that fantastic pile of gold buried at Fort Knox, after all.

Our gold hoard could provide the backing to re-establish world currencies. It may also, in terms of a new dollar value, help us solve our post-war debt problem.

Congress

Big domestic news is the resurgence of Congress. For the first time since 1933 it is standing on its own two feet as an arm of the government. This may have vast repercussions. It may spell the death knell to continued social reform. It is also likely to result in a curb on non-war spending.

New legislation will now originate in Congress itself, instead of "on the hill." And no more "must" legislation sent down by the Executive should be voted on without reading the debate.

Once again we have a democracy.

The President, still the most astute politician of our times, knows what the score is, and is moving accordingly. Appointment of two popular ex-Congressmen, Byrnes and Brown, to key executive posts will prove of tremendous value in meshing the Executive and Congressional minds.

Brown and Henderson

The replacement of Leon Henderson as OPA czar is one of the most significant of recent happenings. It marks a complete turnabout from the President's usual policy. His normal procedure would have been to establish a new super-body over Henderson without firing him and thus, probably, adding to the confusion.

Henderson took the rap for the "do it the hard way" methods and "make 'em suffer" attitude of some of his subordinates. Joel Dean and his overly complicated oil rationing program provided the straw that broke the camel's back of public patience.

Henderson, who has many fine qualities, erred chiefly in depending on ex-professors to work out his program. (Henderson himself is one). Schoolteachers are accustomed to unquestioning obedience from their pupils. They also are apt to become imbued with the "teacher knows best" attitude.

Where rationing is necessary, the public will go along with it. But rationing for rationing's sake, rationing "to make 'em realize there's a war on," doesn't gee with the American spirit.

Brown's biggest task will be reorganization and simplification. The first will contribute to the second. Future rationing programs will have to be simple enough to work, future questionnaires simple enough to understand, future orders simple enough to obey without the present widespread fear of going to jail because of an honest mistake.

This will call for replacement of the professors with men of practical experience. It will also call for a new attitude toward the people. Only a small percentage of the American people are crooks. Judging by some previous OPA methods, one would assume that the reverse is true.

The Industry

Here we are at the end of the line, and nothing about the industry. Well, things don't look too bad for the industry just now. Perhaps we can document this statement next time.

The entire staff of the NEWS wishes you and yours a good holiday season, and thanks for your support in 1942.

La Crosse Beer Dispensing Equipment with a National reputation for Quality and Performance.
La Crosse Novelty Box Mfg. Co.
LA CROSSE, WISCONSIN

The Newest, Most Effective Absorbent
Research Products
SILICA GEL
Absorbing Agent
Research Products Corporation
MADISON, WIS.

ELECTRIMATIC
PRECISION - ENGINEERED
VALVES

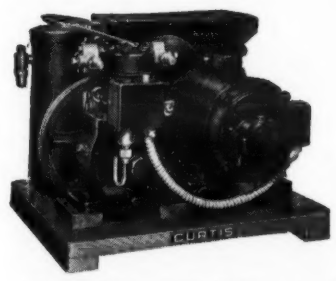
WT . . . temperature actuated regulators thermostatically control the flow of water, brine, steam, gas, etc. WT Valves open on rising temperature and close on falling temperature, modulate smoothly from tight shut to wide open. Packless construction — easy adjustment. Sizes ⅜" to 2" FPT.

WP . . . Pressure Actuated Water Flow Regulators are designed to control the flow of cooling water to the condensers of refrigerating machines. Designed not only to start and stop the water, but also to feed the economic amount of cooling water to secure proper condensing pressure without waste. Sizes ⅜", ½" and ¾" FPT.

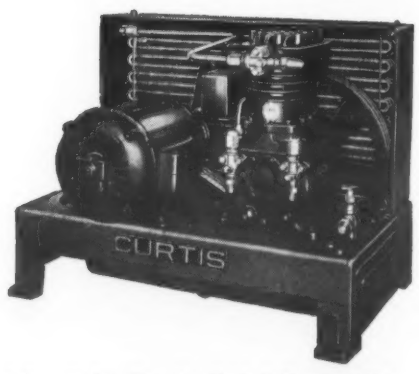
You are invited to send for a copy of our latest catalog, which is descriptive of many of the valves that we manufacture. Individually tested and guaranteed, trouble-free performance.

THE ELECTRIMATIC DIVISION
of The SIMONIZ Company
2100 INDIANA AVENUE CHICAGO, ILLINOIS

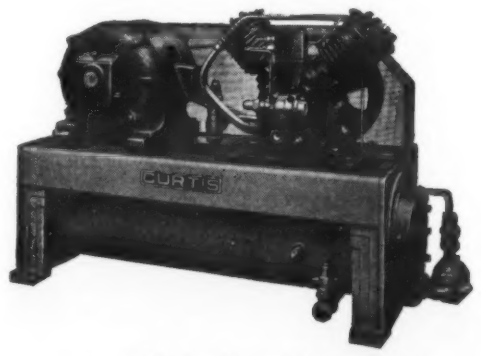
CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1912 KIENLEN AVENUE, ST. LOUIS, MO., U. S. A.
ESTABLISHED 1854
CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL



¼ to ½ H. P. Self-Contained Condensing Units



¾ to 2 H. P. Air-Cooled Remote Type Condensing Units



3 to 15 H. P. Cleanable Shell and Tube Condensing Units

Curtis Refrigeration Units conform to the War Production Board's program for conserving materials.

A complete range of Units, from 1/4 through 15 horsepower, is available.

A major part of Curtis production is now either following the Armed Forces of the United States at home and abroad, on land and sea, or going into our war industries for a wide variety of essential applications.

We are proud that Curtis is thus serving America's War Effort today, just as it has for many years served peace-time industries.

All Curtis equipment is designed and built to deliver dependable, trouble-free, economical operation — performance which is made possible as a result of 88 years of successful manufacturing experience, advanced engineering, precision methods, and the use of the finest materials available.

Furniture Dealers Ask Elimination of Floor Samples from Allowable Inventory

NEW YORK CITY—The National Retail Furniture Association has asked the War Production Board to eliminate floor sample stocks from the computation of allowable inventories under the new formula about to be issued for stock control.

In many stores, especially chain concerns, the assocation points out to WPB, floor samples are more than half of the retailer's entire inventory. John R. Trost, manager of NRFA's local office, argues that if these floor stocks are included as a part of the allowable inventory by the new formula, actual warehouse or sale stock will be so reduced that dealers will soon be "selling themselves out of business" by being forced to merchandise floor models instead of warehouse counterparts.

He explains that in the past a dealer was safe in keeping a large sample stock and a relatively moderate warehouse stock since he could depend on fast replacement service from the manufacturer.

Using bedding and living room furniture as examples, Mr. Trost said that dealers were once able to get shipments of these items from producers' distribution points in two to six days and consequently seldom carried more than a month's supply in their own warehouses.

Many of these points have been shut down, the manager continues, and retailers cannot be certain of shipments unless the goods are bought well in advance and delivery is accepted when convenient for the maker.

He admits that case goods were not generally distributed by manufacturers from local warehouses, but explains that dealers could request staggered shipments when ordering at semi-annual market weeks, and moreover could always depend on speedy shipment of fill-ins.

Since these practices are no longer possible, states Mr. Trost, the dealer today must depend solely on his own inventory. And this stock cannot be sufficient to meet a dealer's needs if the floor samples are included in allowable inventories.

He tells of one chain company operating more than 30 outlets that was found to have a current floor sample stock of $750,000 while the total allowable inventory for the first quarter of 1943 under the proposed formula is only $731,000. This concern will not only be unable to back its floor samples but will have to cut the samples themselves, Mr. Trost points out. He further states that many chain companies throughout the country had from 52 to 60% of their total inventories in floor stock during the base years used in the formula.

Allowable inventories will be further reduced by the sales decline anticipated for 1943 by installment dealers in many areas, he asserts. This in turn, it is explained, will result in the further loss of sales where retailers find it necessary to sell their floor samples.

Big Growth Shown In Locker Storage Use In Pennsylvania During Past 3 Years

STATE COLLEGE, Pa.—Freezer-locker plants in Pennsylvania have increased from seven in 1938 to more than 40 at the beginning of this year, all representing a substantial wartime reservoir of food to families renting from them, according to W. R. Whitacre, assistant professor of agricultural economics at Pennsylavania State college here.

He states that plants in operation last year had nearly 18,000 lockers installed with 80% usage.

Pointing out that such plants offer a market outlet for large quantities of farm products, Prof. Whitacre reveals that nine locker plant managers have reported for a single year the purchase of 217,300 pounds of beef from cattle feeders for resale to both rural and urban patrons.

Various functions of the locker plants named by the professor range from offering refrigerated boxes for keeping food under lock and key, to providing services of butcher or meat cutter and other attendants to assist with preparation and packaging.

Distributors Told Their Survival Lies In Adherence To Order L-63

Purposes and Operation of the Order Detailed; Exchange of Idle Inventories Recommended

NEW YORK CITY—Survival of 17 types of "hard goods" businesses, including refrigerator parts and radio tubes and repair parts, may well depend on how strictly distributors for these trades adhere to all the provisions of Limitation Order L-63, according to warnings sounded by WPB officials before a recent meeting here of suppliers of miscellaneous goods.

Pointing out that there is probably no order issued by WPB that has more far-reaching effect in its intent of purpose for the conservation of metals and finished goods, R. C. Neal of the WPB Distributors Branch told the meeting:

"The types of supplies listed affect approximately 2 billion dollars worth of inventories. Without Order L-63 these inventories might easily have doubled this figure.

"The order is basically designed to effect a faster rate of turnover within the dealer's stock in direct ratio to the sales and flow of business done by that distributor. Therefore, by writing an order with this basic thought in mind, there is no penalty imposed on the distributor for his increased sales on account of increased demand, provided the sales are for war effort or essential civilian needs.

It will be noted upon reading the order that there is no limitation placed on the sales that distributors may make in any given month or any certain time, provided as said before, the sales are for the War effort or essential civilian needs.

"Suppliers Inventory Limitation Order L-63 is the companion piece to distributors priority Application Form PD-1X. Where the PD-1X offers its assistance in maintaining distributors' stocks, the L-63 Order acts as a control so that these stocks will be held to a level consistent of the critical shortage of materials.

"L-63 was designed as a means of insuring equal distribution of the available critical materials of the 17 types of supplies covered by the Order and speeding turnover at the wholesale and retail level. L-63 applies to the overall inventory.

"A distributor may accept delivery of supplies that will increase his stock above the maximum permissible, if his inventory at the time of delivery is below the maximum and then delivery of this merchandise is by minimum quantity that can be commercially procured.

"A distributor who finds it necessary to maintain an unusually large stock of a specific item may do so but he must reduce his stock of other items comparably. As you know L-63 is designed with the thought in mind of reducing distributors' inventories to such a level whereas a 60-days supply of any one item will be considered a substantial working stock. With a distributors' inventory in this position you can readily see it is equivalent to six times turnover per year which we feel is working to the advantage of the distributor, and by the same token, is keeping with the operating limits of the WPB.

"There is one point that is most important under the ratings and quantities that are assigned on the PD-1X application. This does not relieve any distributor of responsibilities that he may have within the terms of the L-63 inventory control order, or any other inventory control order. Under the L-63 order it is the distributor's responsibility to insure that he does not accept any goods whether it is granted on the PD-1X application or whether it may come from the extensions of ratings as allowed and provided for under Regulation No. 3, or whether he may receive it without the ratings. It is his responsibility under the terms of the L-63 Order not to accept his merchandise into his inventory in excess of the limits as prescribed.

"I think it would be well for each distributor who has used and is planning to use the PD-1X application to again read the L-63 Order and its limitations on inventories because in the L-63 Order it is necessary to keep the reporting for PD-336, and this apparently has not been discovered by too many distributors as we have not been overloaded with requests as to the nature of PD-336 and how it is to be filled out.

Linford C. White, chief of the Distributors' Branch, had the following to state:

"I would like to advise every distributor to maintain a buying record, or a perpetual inventory of the more critical items. A distributor, to properly turn over his stock, cannot hope to go along without such records. The change from non-defense to defense business has left many slow moving and dead items on his shelves, and he should take steps to ont only replace such items, but should endeavor, in an orderly manner, to put such items at the disposal of other distributors in other sections of the country who might have a demand for such products.

"It is a positive fact that a distributor could receive an order and not have that siz or type in stock, but his competitoor might possibly have the very thing needed, and yet the first distributor would order the product, thus putting an additional load on our material and production facilities. It would seem that this is a very good time for distributors to forget their business differences and mutually work in the War effort along these lines. Such an effort would be a tremendous help at the present moment, due to the critical shortages of many materials.

"Let's sum it up in this manner—by stating that the times of looking into the bin or on the shelf to determine what should be stock, are over. I urgently request that informational records be set up to help our War program and at the same time you will realize that you will be helping your own business to survive the critical shortage stage that we are going through at the present time.

A Fan Blade for Every Purpose

V-Type Cast Iron Pulleys
Single or Double Groove
Standard or made to specifications

Write for Illustrated Folder

Swift Manufacturing Co.
247 McDougall Detroit, Mich.

ALWAYS ASK FOR

Davison's

SILICA GEL

AVAILABLE in quantities up to 125 lbs. per month to any one person without form PD600 under amendment to WPB order M-219.

GREATER CAPACITY . . . 1½ to 2 times as much as other drying agents.

ACTS INSTANTLY . . . saves time on every job.

REMOVES ACIDS . . . prevents formation of corrosive sludge.

DOES NOT DUST NOR POWDER . . . retains its physical particle size under all operating conditions.

Davison's SILICA GEL has proved that it is MASTER OVER MOISTURE

Your Jobber Can Supply Your Needs

THE DAVISON CHEMICAL CORPORATION
Industrial Chemicals Department
BALTIMORE • MARYLAND

WROT FITTINGS

RETURN BENDS AND TUBULAR PARTS

ACCURATELY made fittings or parts by NIBCO save substantial sums in assembly costs. Accuracy is truly a religion here. Specially designed equipment operated by men who are instinctively fine craftsmen make precision manufacture almost automatic. Constant inspection with individual gauge testing of every item makes it positive. Get our Catalog No. 613. Some of the 1000 items and sizes of our standard fittings shown there may be just what you need. Whenever you require special tubular or cast parts, you can be sure of absolute uniformity and highest quality when they're made by NIBCO.

NORTHERN INDIANA BRASS CO.
ELKHART, INDIANA
VALVES AND FITTINGS SINCE 1904

Appointments & Promotions

Schick President Gets WPB Production Job

Ralph J. Cordiner

* * *

WASHINGTON, D. C.—Charles E. Wilson, WPB Production Vice Chairman, has named Ralph J. Cordiner as WPB Director General for War Production Scheduling.

Mr. Cordiner for the last three years has been President of Schick, Inc., of Stamford, Conn. Prior to that he had many years experience in the major appliance field. In his new position he will carry out the scheduling duties vested in the office of the Production Vice Chairman.

Mr. Cordiner was born in Walla Walla, Wash., March 20, 1900. He worked his way through Whitman College with a part-time job selling electrical appliances for the Pacific Power and Light Co. Shortly after he was graduated as an engineer he accepted a position with the Edison General Electric Appliance Co. at Portland, Ore. In 1927 he became Northwest manager for the company at Seattle, and in 1930 manager of the Pacific Coast Division.

When the Heating Device Section of this company was consolidated with the Merchandise Department of General Electric at Bridgeport, Conn., in 1932, he became its manager and chairman of the management committee. As such he became one of the youngest senior executives in the electrical appliance industry. Two years later he was appointed assistant manager of appliance sales, and in 1936 became manager of their Radio division.

Since then Mr. Cordiner has directed his attention largely toward actual production problems. In 1936 he was promoted to the position of assistant manager of the Appliance and Merchandise Department, and became its manager in 1938. In this post he was responsible for the production of all home appliance and construction materials for his company. This included manufacture of hundreds of objects calling for modern precision methods, and production planning and scheduling on a large and varied scale.

In 1939 Mr. Cordiner became the president of Schick, Inc.

Croasdale Named Head of New Westinghouse Office

PHILADELPHIA—To better handle its war effort business, the Westinghouse Lamp Division has replaced its branch office organization here with a complete district office in charge of Harry A. Croasdale, formerly assistant manager of the middle western district and at one time branch manager in Philadelphia.

R. A. Corvey, manager of the disbanded branch, has been appointed assistant manager of the northeastern district with headquarters in New York City, according to announcement of B. H. Sullivan, general sales manager of the division.

The new middle Atlantic district under Mr. Croasdale, Mr. Sullivan explained, will cover the District of Columbia, seven counties in New Jersey, the entire states of Delaware, Maryland, and parts of West Virginia and Pennsylvania.

Lyon Sets Up New Service Concern In Little Rock

LITTLE ROCK, Ark. — Much of the swamped refrigeration service plight of this city has been lifted since the formation of the Frank Lyon Co., large refrigeration service organization here, in October.

Frank Lyon, president, who was an executive of the Gunn Distributing Co. here until late this year, has purchased reconditioned machinery and equipment to set up an efficient service organization at 1020 Main St., including complete commercial and household refrigeration service, washing machine, electric range, gas range and small appliance shops. Specially trained men were produced from appliance dealerships closing up. Floyd Payne has been named service manager and Benjamin Hockey, salesmanager in charge of "merchandising" of service.

WPB Names Stewart To Regional Salvage Post

PHILADELPHIA—James W. Stewart, president of Unit Air Conditioning, Inc. of New York City, has been appointed assistant regional chief of the Industrial Salvage section of War Production Board's Conservation division, headquarters here announce.

Unit Air Conditioning, Inc. will continue operating—primarily in air conditioning work for war industries and the armed forces — under the direction of Paul Harvey, vice president.

Dallas Appliance Buyer Takes Lockheed Position

DALLAS—Major appliance buyer, Carter Moore, of the Fakes Furniture Co. here has left the company to accept a promotional post with the Lockheed Aircraft Corp., effective Sept. 10. He will not be replaced, according to John Yergan, manager of the store.

Joins Mueller Brass

Frank M. Conroy

* * *

PORT HURON, Mich.—Beginning now to build a future export business, Mueller Brass Co. here has appointed Frank M. Conroy to head a newly formed export division, the first such department ever established by the company.

Until June of this year, Mr. Conroy was assistant manager of export work for the Nash-Kelvinator Corp. in Detroit.

Announcing Mr. Conroy's appointment, Mueller Brass states, "While we are unable, at the present time, to sell foreign markets, we have a job to do in cultivating the ground." The company, normally producing copper and brass pipe, fittings, and castings, is now engaged 100% in war work.

The head of the new division is a graduate of the School of Foreign Service of Georgetown university, Washington, D. C. For six years he was an Infantry Captain in the United States regular Army, resigning his commission in 1922.

From then until 1925 Mr. Conroy was special agent in the U. S. Department of Commerce of the Bureau of Foreign and Domestic Commerce in Washington. In March 1925 he joined the Nash-Kelvinator staff.

Col. Baxter Appointed Chief of Materials Redistribution

WASHINGTON, D. C. — Col. Charles R. Baxter, formerly with the Ordnance Department of the U. S. Army, has recently been appointed chief of the new Materials Redistribution Branch of the War Production Board.

This new branch will take over the functions and personnel of the Inventory and Requisitioning Branch of the WPB.

The past 22 years, Col. Baxter has spent in the Ordnance Department of the U. S. Army. In his new position, he will have Donald M. Nelson as his chief.

E. A. Tupper, who was formerly chief of the Inventory and Requisitioning Branch has agreed to stay on for some time to aid the new Materials Redistribution Branch.

To Do Executive Work For Kansas City Assn.

Harry E. Moore

* * *

KANSAS CITY, Mo. — The new executive secretary of the Electric Association of Kansas City is Harry E. Moore. He succeeds G. W. Weston, who has moved to Washington, D. C., and is now the assistant manager of the Electrical Contractors' Assn.

Mr. Moore comes to the Kansas City association with a background that fits him to take over the executive duties, having been connected with the Kansas City Power and Light Co. for the past 15 years in sales and service executive positions.

Attention:

NEW YORK & PENNSYLVANIA BUYERS

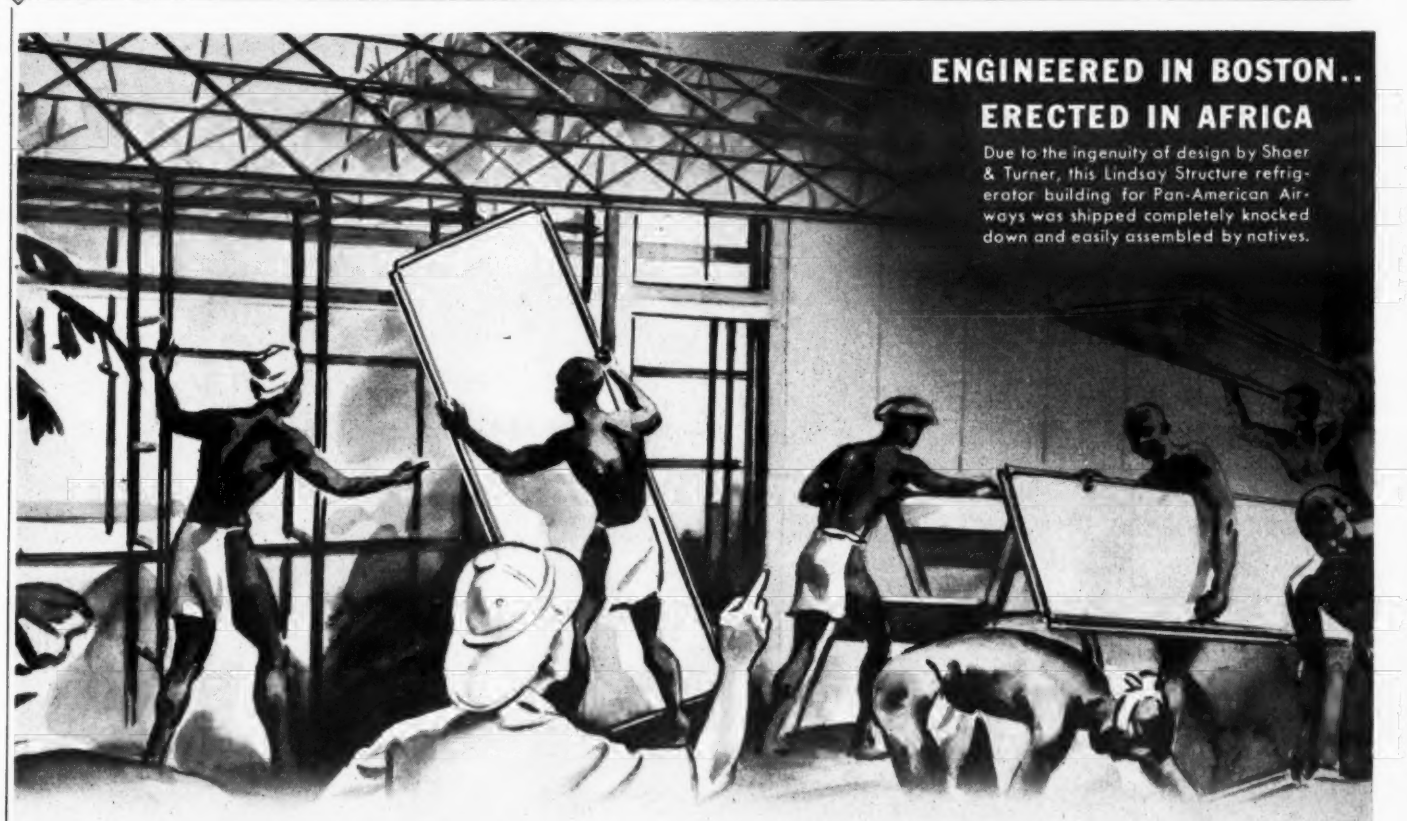
We Invite Your Inquiries For
Refrigeration & Air Conditioning Supplies

Large Stocks Carried In Both Stores

Fittings - Parts - Compressors - Valves - Coils - Tools
Hardware - Belts - Refrigerants - Heating Controls - Specialties
Air Filters - Gauges - Oil - Service Manuals

CENTRAL SERVICE SUPPLY CO.
Ted Glou

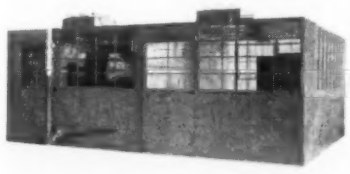
Syracuse, N. Y.	409 E. Jefferson St.	Phone 5-4000
Scranton, Pa.	209 Jefferson Avenue	Phone 3-4000


ENGINEERED IN BOSTON..
ERECTED IN AFRICA
Due to the ingenuity of design by Shaer & Turner, this Lindsay Structure refrigerator building for Pan-American Airways was shipped completely knocked down and easily assembled by natives.

SKILLED LABOR SCARCE—REGULAR BUSINESS HANDICAPPED BY PRIORITIES...

I. E. SHAER and JOHN TURNER of Shaer & Turner Engineering Company, Boston, say, "Lindsay Structure has proved its value to us in a great number of different installations. Now, when skilled labor is hard to find, its ease of assembly saves serious delays."

Lindsay Structure was used in this "hot box" for special laboratory test work. Designed and manufactured by Shaer & Turner.



Gauge room built by Shaer & Turner in the plant of a large manufacturer. Use of Ls made possible air-tight structure for accurate temperature control.

YET THIS PROGRESSIVE ENGINEERING FIRM IS DOING OUTSTANDING WORK *TODAY*...

People said the air conditioning business would be hard hit by the war—priorities—and shortage of everything including skilled labor. But it wasn't so for the men at Shaer & Turner Engineering Company. They found the unusual jobs that required their broad engineering experience ...big refrigerator buildings for Pan-American Airways' bases in Africa... special machines for war industries...a "hot box" for critical laboratory tests. These and many other projects have meant good business for Shaer & Turner.

Of a number of efficiency measures adapted by Shaer & Turner to meet present conditions and make deliveries, one was their standardization on Lindsay Structure for housings, partitions, structural work, and similar applications. Hence they were sure of completing their jobs with prefabricated materials despite the lack of skilled labor. They win over competition whenever light weight, strength, and compactness are important factors in getting special orders.

Lindsay Structure may be the answer to some of your problems in getting new sales these days. Write Lindsay Structure Division, Dry-Zero Corporation, 242 North Bank Drive, Chicago, Ill.; or 60 E. 42nd Street, New York, N. Y.

LINDSAY Ls STRUCTURE

U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents Pending

LINDSAY STRUCTURE CAN SAVE THOUSANDS OF TONS OF STEEL PER MONTH

HERMAN GOLDBERG CO.
MANUFACTURERS' AGENT

RANCO CONTROLS — ANSUL REFRIGERANTS
STANDARD EVAPORATORS
D.F.N. DEHYDRATORS CHICAGO SEALS
20 N. WACKER DR. - CHICAGO

24 years' service to the industry

ACME PRODUCTS

You don't have to sacrifice quality for price
BUY ACME

EVAPORATIVE CONDENSERS
All Prime Surface Cooling Coils—Copper or Steel
AMMONIA CONDENSERS
Shell and Tube—Horizontal or Vertical
FREON CONDENSERS
Shell and Tube—Steel or Copper
DIRECT EXPANSION WATER CHILLERS
Indirect Air Conditioning and Processing Water
FLOODED WATER CHILLERS
Drinking and Ingredient Water
BRINE COOLERS
Steel Tubing or Pipe
HI-PEAK WATER COOLERS
Storage Type, Direct Expansion
CASCADE WATER COOLERS
Aerator Type, Bottling Plants
FINNED COILS
Air Conditioning—Low Temp.
PIPE COILS
Steel—½" to 2"
HEAT INTERCHANGERS
Refrigerant Suction Line—Liquid to Gas
OIL SEPARATORS
Separators—Not Traps
LIQUID RECEIVERS
Refrigerant
ACCUMULATORS
SURGE DRUMS
Refrigerant
FORCED CONVECTION UNITS
Cold Dispensers
SHELL AND TUBE HEAT EXCHANGERS
Liquid to Liquid—Gas to Gas, etc.

OUR GOVERNMENT, OF COURSE, HAS FIRST CALL ON OUR FACILITIES BUT WE ARE STILL ABLE TO ENTERTAIN YOUR INQUIRIES AND ORDERS IF APPROVED FOR MANUFACTURE BY W.P.B. WE WANT TO SERVE YOU.

ACME INDUSTRIES
JACKSON, MICHIGAN

5 IMPORTANT SPOTS USING THAWZONE

The method of dehydrating refrigeration systems by adding THAWZONE has become standard practice with many manufacturers, servicemen and contractors after a successful experience with it for over 5 years.
THAWZONE is a powerful dehydrating agent in solution form. It mixes with refrigerant and reaches all "trapped" moisture in a system. It is the ONLY fluid with true drying action now in use.

THAWZONE is used in both new and reconditioned installations as well as units already in operation for long or short periods. It is both a preventive and a cure.

For each pound of refrigerant, THAWZONE's ⅛ ounce of prevention is worth many pounds of cure. THAWZONE in new installations will greatly reduce or entirely prevent the following:
- Copper-plating
- Corrosion of valves, seals, etc.
- Most types of oil-decomposition, acid and sludge formation. (Reason: Oil is more stable in the absence of water)
- Frozen expansion valves

THAWZONE also has a very successful record in combating moisture in service work and reconditioning. YOU can SAVE:
- Money by using THAWZONE
- Vital metals, needed for the war program which are required by other drying methods.

Suitable for use with the freons, methyl chloride, methylene chloride, iso-butane or any hydrocarbon refrigerant.

HIGHSIDE CHEMICALS CO.
195 Verona Ave, Newark, N.J.

THAWZONE
Fully Protected by U. S. Patents
The PIONEER FLUID DEHYDRANT

Servicing the G-E Scotch Yoke Refrigerator Machine

From the General Electric Service Dept. Educational Film of the Same Name

(INSTALLMENT 7: CORRECTING COMPLAINT OF 'UNSATISFACTORY REFRIGERATION')

Editor's Note: The editorial material on these pages is a published version of "Servicing Scotch Yoke Machines," originally presented as a sound slide film produced by the Product Service Division of General Electric's Appliance and Merchandise Department. The material is appearing in instalment form in Air Conditioning & Refrigeration News, by permission of the General Electric Co.

Previous instalments are:

Instalment 1 (Sept. 28)—Principles of Machine Operation.

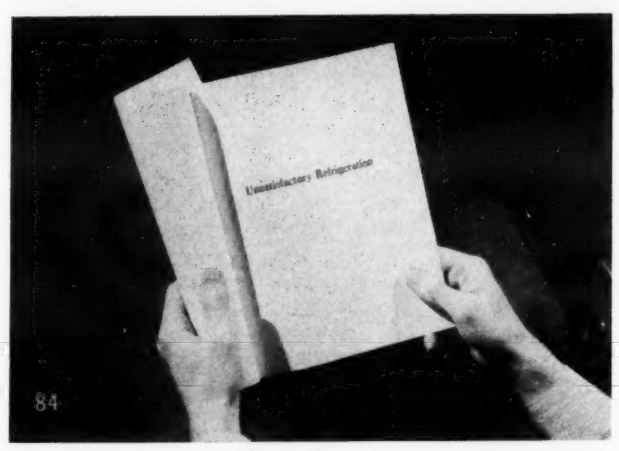
Instalment 2 (Oct. 12)—Operation of the Temperature Control.

Instalment 3 (Oct. 26)—Finding Out Why Sealed Unit Will Not Run.

Instalment 4 (Nov. 9)—Checking Temperature Control and Starting Relay.

Instalment 5 (Nov. 23) Checking Capacitor and Wiring to Find Trouble.

Instalment 6 (Dec. 7)—"Will Not Run" and "Trips Off on Overload" Complaints.



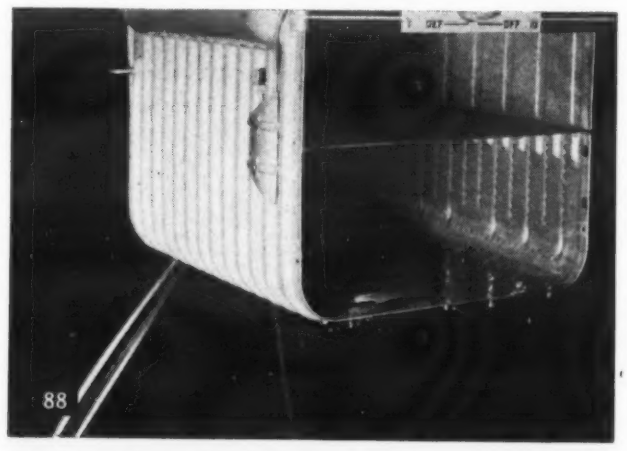
(84) Now let's consider complaints that have to do with "unsatisfactory refrigeration." In the story that follows, we can assume that the machine runs—but for some reason the refrigeration is not what the customer expects.

(86) In cases where real trouble exists, the customer can be of great help to you in finding what is wrong. We will take up some common examples, and show you how they can be dealt with.

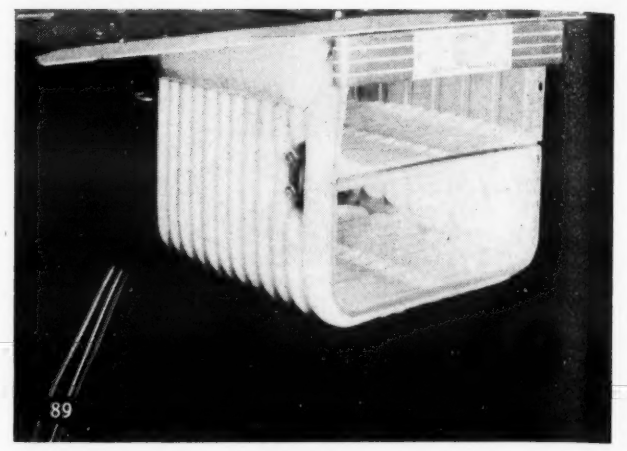
Checking Operation of Machine

1. Observe evaporator frost conditions
2. Measure cabinet temperature
3. Measure evaporator temperature
4. Note running time

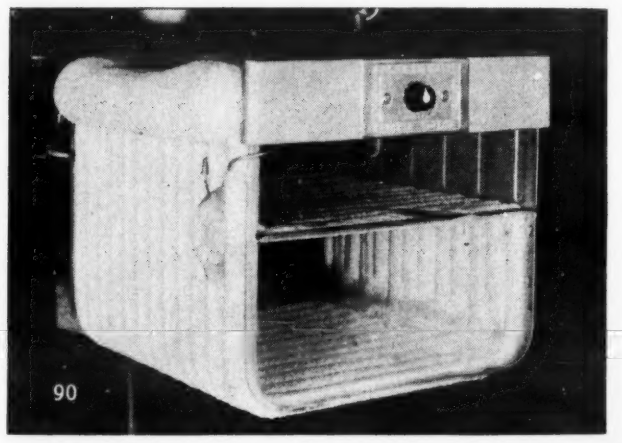
(87) To check the operation of the machine, first observe the evaporator frost conditions, second measure the cabinet temperature, third measure the evaporator temperature, fourth note running time.



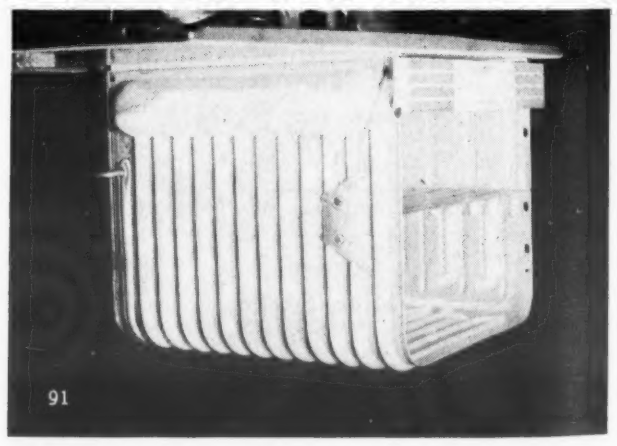
(88) If the evaporator is warm or sweating, or if the frost line is abnormally low, there is undoubtedly something wrong with either the control or the machine. However, be sure you understand what normal frosting is.



(89) The appearance, location, and amount of frost varies with the weather, the usage, and the control setting. In warm and humid weather, with average usage, the frost will cover all the refrigerated surface of the evaporator, and may have a glazed icy appearance. The frost build-up will be quite rapid under these conditions.

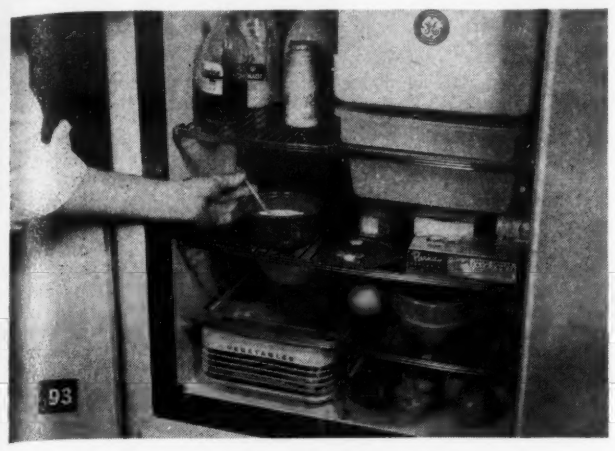


(90) In moderate weather, with light usage, the frost build-up is slow and sometimes uneven. Under such conditions, the frost tends to be crystalline in form. The left side and bottom of the evaporator will usually be well covered.



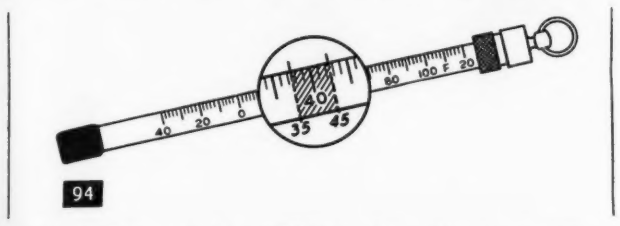
(91) The shelves, right side, and the full rear channel may have little or no frost at all. This is brought about by the limited amount of frost collecting on the coldest sections of the evaporator.

(92) Before continuing, we'd like to point out that in cold locations and with warmer control settings, the 1941 Deluxe machine with the "Steady Cold Control" has somewhat different frost characteristics than those we have just discussed.

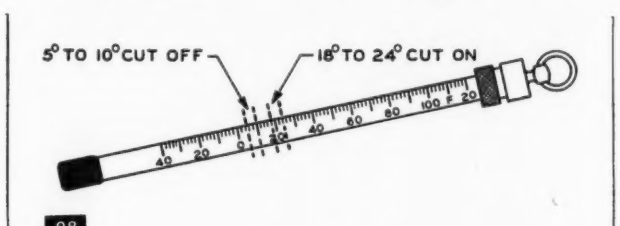


(93) To measure the cabinet temperature, use a good thermometer. Wash it off and place it in a container of liquid that has been in the cabinet for a long time. The reading will be more accurate than one taken in the cabinet air alone.

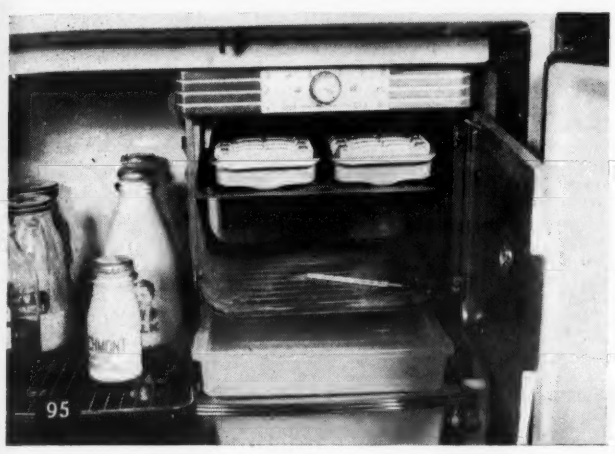
(97) When the machine stops, open the door and quickly read the thermometer while it's still in place. This is the "Cut-Off" evaporator temperature. The reading at the time the machine starts up is the "Cut-On" evaporator temperature.



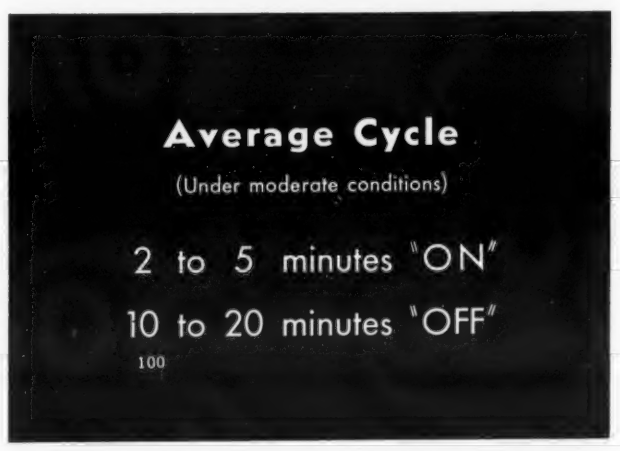
(94) Under normal conditions, the cabinet temperature should be between 35° and 45° F. However, this will vary with the room temperature. In summer, the control should be set colder in order to hold the desired temperature. This applies to all except those with 1941 "Steady Cold Control."



(98) These temperatures will vary with different machines and control settings. However, the "Cut-Off" point will usually be between 5° and 10°—the "Cut-On" between 18° and 24°.



(95) To check the evaporator temperature, freeze the thermometer bulb to the center of the bottom shelf. Make sure that the bulb actually contacts the surface and is not insulated from it by ice. Close the cabinet and let the machine cycle.



(100) During these temperature checks, it's possible to get an idea of the running time of the machine. This, of course, will vary greatly with the load. An average cycle under moderate conditions is between 2 to 5 minutes on, 10 to 20 minutes off.

G-E Manual Aids in Shifting Motors

SCHENECTADY, N. Y.—The questions of how to shift motor-equipped machines to war jobs, how to equip machines with the proper motors, and how to get the most service out of motors doing a 24-hour a day job, is covered in a new illustrated bulletin, "Motor Fitness Manual," issued by General Electric Co.

The bulletin would be of value to any plant in which motors are widely used, but it is written particularly for use by concerns which have converted to war production and which are facing the problem of getting the most out of each machine by altering machines to do new jobs, switching motors to new or different equipment, and applying individual motor drives to older, rebuilt machines formerly driven from line shafting.

The table of contents lists the following sections: How to Select and Apply Motors; Types of Motors—Degree of Protection; Secondary Ratings of Standard Integral-hp. Motors; Three Easy and Practical Ways to Determine WR^2 (moment of inertia); How to Maintain Electric Motors for Longer Life and Peak Performance; Approximate Full-load Currents of Motors — Miscellaneous Data; How to Select A-C Control; How to Use the Hook-on Volt-Ammeter; Additional G-E Motor Helps.

Three introductory sections provide a means for quick reference by referring the reader to certain pages

The table of contents lists the following sections: How to Select and Apply Motors; Types of Motors—Degree of Protection; Secondary Ratings of Standard Integral-hp. Motors; Three Easy and Practical Ways to Determine WR_2 (moment of inertia); How to Maintain Electric Motors for Longer Life and Peak Performance; Approximate Full-load Currents of Motors — Miscellaneous Data; How to Select A-C Control; How to Use the Hook-on Volt-ammeter; Additional G-E Motor Helps.

Three introductory sections provide a means for quick reference by referring the reader to certain pages in the event of such conditions as: "when you shift your motor-equipped machines to war jobs;" "when you set up machines requiring new motors, or motors switched for other jobs;" and "when you plan to operate motors on a 168-hour week, or other strenuous wartime service."

A supplement explains how to save critical motor materials, including WPB recommendations, and information on the use of load-time-temperature charts.

MUELLER BRASS CO.
25th
ANNIVERSARY
1917 - 1942
25 YEARS
OF PROVIDING THE EAGLE WITH CLAWS!
● Twenty-five years of providing the eagle with claws... and twenty-five years of accumulated "know how" in the manufacture of munitions for Uncle Sam and . . . of providing our good customers with quality brass and copper products.
Refrigeration valves, fittings and accessories, as well as many other products of this company, are now in the service of our armed forces, in the air, afloat and ashore—and on this, our 25th anniversary, we dedicate ourselves to an all-out effort for war... knowing that only through the winning of it can we gain a lasting peace. We are now preparing for and hopefully looking forward to the time when we can again resume peace-time trade with our many good customers who have contributed so much to our TWENTY-FIVE successful years. It is our resolve to then provide them with better products and better service.
If you have a problem NOW, please write us. We'll do our utmost to help.
ARMY E NAVY
MUELLER BRASS CO.
PORT HURON, MICHIGAN

Do You Have a Copy?
STANGARD
Cold Plates
PURPOSES
THE STANGARD-DICKERSON CORP.
VALUABLE TECHNICAL DATA SECTION
WRITE FOR YOUR COPY TODAY!
HERE is a catalog you should have! It tells completely the many applications of STANGARD PRIME SURFACE COLD PLATES . . . many applications which are "musts" in our present national effort. Contains valuable technical data section of 24 pages conveniently arranged for easy use.
Remember, STANGARD Prime Surface Cold Plates give you high refrigerating efficiency (higher than any other type of plate because of its prime surface*) . . . great structural strength, light weight, ease of installation and low cost. For these reasons you will find STANGARD Prime Surface Cold Plates continually specified for —
LOCKER PLANTS • DISPLAY CASES • FOOD COUNTERS
SODA FOUNTAINS • TRUCKS • LIQUID COOLERS
BLOOD PLASMA CABINETS • ICE CREAM CABINETS
FARM MILK COOLERS • FARM FREEZE CABINETS
FROSTED FOOD REFRIGERATORS
BEVERAGE COOLERS • RIVET CHILLERS
LOW TEMPERATURE TEST ROOMS
* No intermediate factor between refrigerant and contact surface.
STANGARD-DICKERSON CORP.
46-76 OLIVER STREET NEWARK, NEW JERSEY

"DAY & NIGHT"
A Complete line of Storage Type Water Coolers in accordance with Latest W. P. B. Regulations
DRINKING FOUNTAINS
NAVY-2 Models for Shipboard use
ARMY-NAVY-2 Models for land use
CAFETERIA TYPE COOLERS
ARMY-NAVY 2 Models for Mess Halls
INSULATED STORAGE TANK TYPES
6 Models for Bakery Service • 3 Models for Film Processing •
WRITE FOR LATEST DATA
COOLER DIVISION
DAY & NIGHT MFG. CO.
MONROVIA • CALIFORNIA
FACTORY REPRESENTATIVES
NEW YORK — A. C. Homeyer, 682 Bdwy. • Marc Shantz, 565 Wash. Blvd.
CHICAGO
ST. LOUIS — R. H. Spangler, 3331 Market St. • I. E. Parker, 228 2nd St.
DECATUR, GA.

PANEL TYPE
UNIT COOLERS
Solve Many Coil Space Problems
KRAMER TRENTON Co.
Heat Transfer Products
TRENTON, N. J.

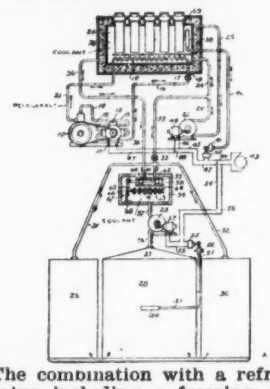
WOLVERINE
REFRIGERATION TUBE
WOLVERINE TUBE DIVISION
OF CALUMET AND HECLA
CONSOLIDATED COPPER COMPANY
1413 Central Ave. • Detroit, Michigan

REFRIGERATION PRODUCTS
fedders
BUFFALO, N. Y.

PATENTS

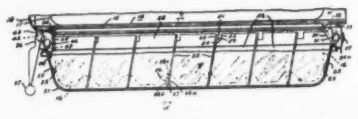
Weeks of Nov. 17 & 24

2,301,938. REFRIGERATOR. Charles D. Fator, San Antonio, Texas. Application Aug. 16, 1939. Serial No. 290,423. 7 Claims. (Cl. 62—95) (Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757).



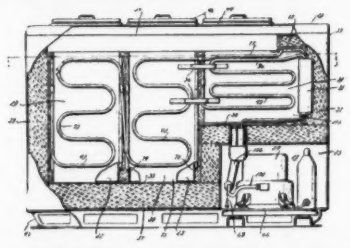
1. The combination with a refrigerating apparatus including a freezing coil, of a coolant system including a receptacle having walls defining an insulated compartment, adapted to retain said freezing coil, a plurality of narrow inter-communicating chilling vessels forming interior walls of a storage compartment, a mixing device and conduits arranged to place the mixing device in communication with said insulated compartment and with said plurality of intercommunicating chilling vessels; said mixing device including a mixing chamber provided with two thermostatically controlled intake ports for selectively admitting coolant from the insulated compartment and the intercommunicating vessels, and an outlet port through which the mixed coolant is conveyed to the chilling vessels at a predetermined temperature.

2,302,044. REFRIGERATING APPARATUS. Paul J. Mochel, Detroit, Mich., assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application May 28, 1941. Serial No. 395,646. 9 Claims. (Cl. 62—108.5).



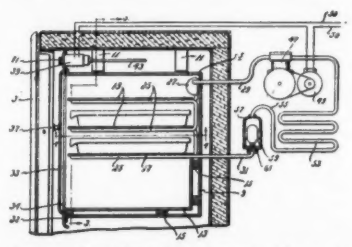
1. A freezing apparatus comprising in combination, a heat absorber, a grid in intimate thermal contact with said heat absorber, a tray adapted to contain liquid to be frozen cooperative with said grid so that walls of the grid depend into and divide the interior of said tray into a plurality of ice block forming compartments, means for holding the tray in said cooperative relation with said grid during freezing of the liquid in said compartments, and manually actuated means for moving said tray relative to said grid to break the bond between walls of the tray and ice blocks in said compartments, said manually actuated means including means for applying force to said ice blocks to cause the blocks to be released from walls of said grid.

2,302,051. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich., a corporation of Maryland. Application Aug. 2, 1940. Serial No. 349,449. 6 Claims. (Cl. 62—99).



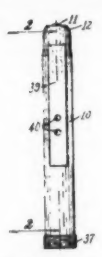
1. Refrigerating apparatus comprising three box-like liners for food compartments, a single path refrigerant evaporating conduit arranged in heat exchange relation with the four vertical side walls of each of said liners and with the bottom wall of one of said liners, said conduit being arranged to conduct the refrigerant in heat exchange relation first with said bottom wall and then with two sides of a second liner and then with four sides of the second mentioned liner and finally with the four sides of the first mentioned liner.

2,302,052. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corp., Detroit, Mich, a corporation of Maryland. Application April 12, 1941. Serial No. 388,251. 5 Claims. (Cl. 62—126).



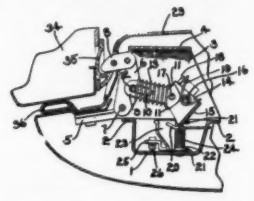
1. A non-frosting two-temperature cooling unit comprising an outer metallic enclosure, a plurality of freezing plate shelves, insulating means for mounting said freezing plate shelves in said enclosure in spaced relation to each other and to the side walls of the enclosure, a smaller cold compartment chamber of which one of said freezing shelves comprises a wall, insulating means for supporting said chamber in said enclosure in spaced relation thereto, and a refrigerant evaporating conduit disposed in said cold chamber and extending in thermally engaging relation with each of the freezing shelves in said outer enclosure.

2,302,072. WARNING SIGNAL FOR REFRIGERATORS AND THE LIKE. Arthur J. Tickell, Hamden, Conn. Application Feb. 28, 1939. Serial No. 295,004. 4 Claims. (Cl. 177—311).



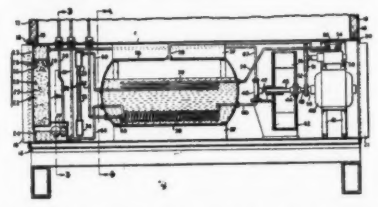
1. A warning signal device for refrigerators and the like intended to give visual warning when the temperature within a refrigerating chamber or like space is exceeded, comprising a small portable casing adapted to be inserted into and removed from the chamber and to occupy a minimum amount of space therein, said casing being of elongated cylindrical shape and of electrically conductive material and carrying an incandescent bulb adjacent one end, the opposite end of the casing being a closed end, said bulb having two contacts of which one is connected to said casing, a dry cell within the casing having a pole contact connected with the other contact of the bulb and provided with a metallic shell electrically insulated from said casing, the bottom of said shell being free of insulation and spaced a substantial distance from the closed end of the casing, and means disposed in the casing between its closed end and the bottom of the dry cell for positioning the dry cell with respect to the bulb and for establishing and disestablishing electrical connection between the rear end portion of the casing and the bottom of the dry cell, said last-named means including a hollow thermoresponsive member adapted to be extended lengthwise of the casing to close the bulb circuit when a predetermined temperature limit is reached and adapted when the temperature is lowered to be contracted in a lengthwise direction so as to break the bulb circuit.

2,302,165. REFRIGERATOR LATCH. Lloyd L. Anderson, Grandville, Mich., assignor to Winters & Crampton Corp., Grandville, Mich., a corporation of Michigan. Application June 19, 1941. Serial No. 398,783. 6 Claims. (Cl. 292—123).



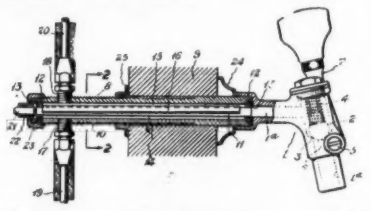
4. A pivotally mounted latch bolt, a toggle comprising two pivotal arms, one of the arms of said toggle having a pivotal and slidable connection to the latch bolt between its ends, and the other arm of said toggle having a fixed pivotal mount, a relatively light spring acting on said other arm of the toggle for normally holding the bolt in latching position with the toggle arms substantially at dead center, a pivotally mountd manually operable member engaging with said other arm of the toggle to turn it about its pivotal mounting and retract the latch bolt, the contact of said pivotally mounted member with said toggle arm being a rolling contact and the point of contact between them progressively moving away from the pivotal axis of said member as the latch bolt is farther retracted.

2,302,189. REFRIGERATING APPARATUS. Clinard P. Chambers and Carroll W. Baker, Los Angeles, Calif. Application Sept. 16, 1940. Serial No. 356,916. 21 Claims. (Cl. 62—117).



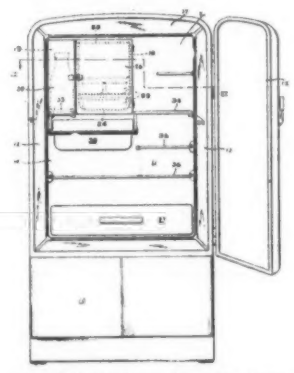
1. In a refrigerated vehicle, a thermally insulated body, a tunnel member transversely disposed in said body and having open ends at opposite sides of the vehicle, forwardly disposed louvers at one of said open ends, rearwardly disposed louvers disposed at the other of said open ends, an evaporative cooler within said tunnel adjacent said forwardly disposed louvers, and refrigerating means within said tunnel for absorbing heat from the interior of said body, said refrigerating means including a refrigerant handling element disposed adjacent to said cooler and adapted to be cooled thereby.

2,302,273. REFRIGERATED FAUCET. Thomas Sutton, Cleveland, Ohio, assignor to Temprite Products Corp., Detroit, Mich., a corporation of Michigan. Application Aug. 5, 1940. Serial No. 349,440. 5 Claims. (Cl. 225—5).



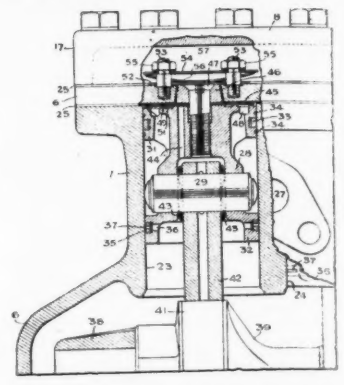
1. In a dispensing faucet, a shank structure adapted to extend through an apertured mounting panel and formed at its rear end to be operatively connected to a source of liquid to be dispensed, said structure comprising an outer tubular part, an inner tubular part located in the outer part with an intervening space between the inner surface of the outer part and the outer surface of the inner part, said inner part constituting a condut section for the liquid to be dispensed, two annular end walls joining together the front ends of the outer and inner parts and the rear ends of said parts, respectively, partition means extending lengthwise of the shank and dividing the said intervening space into two longitudinally extending passages, said passages having communication with each other at the front end of the shank and one of them having an inlet opening at the rear end of the shank and the other having an outlet poening at the rear end of the shank, whereby cooling liquid can be passed continuously from the rear end to the front end of the shank so as to extract heat from the inner tubular part thereof and effectively cool liquid therein.

2,302,385. REFRIGERATION APPARATUS. William B. Anderson, West Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application June 3, 1941. (Cl. 62—89).



1. In a refrigerator, the combination of an insulated food storage chamber having a rear, side, top, and bottom wall, and a door forming at least a portion of the front wall of said food storage chamber; a cooling unit in the upper portion of said food storage chamber, said cooling unit comprising an exposed vertical refrigerated wall parallel to and spaced from said side wall of said food storage chamber and an exposed and refiigerated lower wall, said cooling unit defining a freezing compartment; a substantially imperforate food storage container located below said cooling unit and having a portion of its top wall located closely adjacent said bottom wall of the cooling unit and a second portion of its top wall extending to adjacent said side wall of the food storage chamber; and a second door, near to and substantially parallel to the door of the food storage chamber when both of said doors are closed, said second door closing the space between said refrigerated wall of the cooling unit and said last-mentioned side wall of the food storage chamber, said space being suitable for the storage of packaged milk.

2,302,448. REFRIGERATIVE COMPRESSOR. William D. Leonard, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a corporation of Delaware. Application Oct. 24, 1940. Serial No. 362,691. 9 Claims. (Cl. 230—190).



1. A refrigerating compressor comprising in combination, a cylinder having a working space and an inlet thereto; a crank case containing a lubricant; a reciprocating piston which substantially isolates said working space and inlet from said crank case; an inlet valve controlling communication through the inlet to the working space; and means associated with the inlet valve and controlling a pressure equalizing connection between the crank case and the inlet, the parts being so arranged that said connection is open when the inlet valve is open and closed when the inlet valve is closed.

(To Be Continued Next Issue)

IT'S TYLER
BIGGEST PROFIT POSSIBILITIES FOR THE LONG SWING!
Now, with Tyler devoting much effort to the national war program, don't forget the benefits which will accrue to Tyler distributors when the full force of Tyler production is again harnessed to peacetime business. TYLER FIXTURE CORPORATION, NILES, MICHIGAN.

Humi-Temp Forced Convection Units—Patented CROSS-FIN-COILS — Bare Tube Coils — Zinc Fused Steel Plate Coils—Disseminator Pans — Heat Exchangers—Evaporative Condensers — Instantaneous Water Coolers —
See Your Jobber or Write Direct
LARKIN COILS, Inc.
519 Memorial Dr., S.E.
ATLANTA, GA.
The Watchdog of the Nation's Food Supply
REFRIGERATION

SAFEGUARD America's Food Supply!
Keep fit—with healthful, wholesome food! America's strength lies in her steel and ships and military resources—and in the muscle and morale of every American citizen!
Modern Refrigeration is a vital requisite to a sound defense program—and Ranco is proud to be playing its part in safeguarding the food supplies that keep America strong and fearless.
Ranco INC.
COLUMBUS, OHIO, USA

For 1942 — most complete range of styles and sizes — 12 to 71.5 cu. ft. — in the industry. New modern styling — priced for real value.
Reach-in CABINETS
Midwest Mfg. Company
GALESBURG, ILLINOIS

For: TRUCKS, LOCKERS, COOLERS, COUNTERS, CABINET CONVERSIONS, use:
KOLD-HOLD PLATES
KOLD-HOLD MFG. CO.
LANSING, MICH., U.S.A.

For Information on Motors
FOR ALL TYPES OF
Air Conditioning and Refrigeration Equipment
WRITE TO
Wagner Electric Corporation
6441 PLYMOUTH AVE ST. LOUIS, MO

PRECOLD COILS — WATER-DEFROST
U.S. PAT. 2,219,393
REFRIGERATION ENGINEERING Inc.
LOS ANGELES, CALIFORNIA

Use CHICAGO SEALS
for seal replacements
A complete line in all sizes
CHICAGO SEAL CO.
20 North Wacker Dr., Chicago

DOLE
VACUUM PLATE
COOLING & FREEZING UNITS
CHICAGO

3 CATALOGS IN 1
HERMETIC UNITS - COMPRESSORS - PARTS
FRIGIDAIRE - KELVINATOR - NORGE - G-E
Complete Line Refrigeration Parts - Tools - Supplies
WRITE FOR YOUR COPY ON YOUR LETTERHEAD
SERVICE PARTS CO.
MELROSE PARK, ILLINOIS

Acceptance and Delivery of All Motors Over 1-Hp. Governed by Order L-221

WASHINGTON, D. C. — To conserve electric motors and generators, War Production Board Dec. 2 issued General Conservation Order L-221 restricting orders for and deliveries of energy-transforming equipment. All electric motors of one horsepower or above and all generators of ¾ KW to 6,000 KW except those used in automotive type engines, are covered by the regulation.

L-221 places certain restrictions on acceptance and delivery of motors and generators after Dec. 10, 1942; establishes requirements as to types of motors that can be ordered after Dec. 10 or delivered after Feb. 1, 1943; and sets up a pattern of certification that must be followed by a purchaser—or a manufacturer making motors and generators for incorporation in other machinery which he also produces—ordering after Dec. 10 or receiving orders after Feb. 1 that were placed before Dec. 10.

In dealing with acceptance and delivery of motors and generators, the regulation states that beginning Dec. 10 no orders may be accepted or delivered unless the buyer has no idle motor or generator in his possession which could meet the needs for which he is seeking the new equipment. Moreover, he is required to have first tried to obtain suitable used motors and generators from at least three dealers, unless he is ordering in lots of 10 or more motors and generators of an identical kind and rating to be used in machinery which he manufactures.

This same provision says that orders cannot be accepted or deliveries made if the purchase is for replacement of existing equipment. It further rules that the motors must be required for immediate connection to the purchaser's load and electric system or for immediate incorporation into machinery which he produces, and cannot be used for standby purposes.

Exceptions to restrictions on acceptance and delivery of orders include equipment going to the Army, Navy, Maritime Commission, or War Shipping Administration. Orders for special motors placed by a manufacturer making equipment into which the motors will go are also excluded from control of L-221 provided the special motors were needed in construction of the machinery at the date L-221 was issued.

Certain mechanical and electrical standards are set up in the regulation which motors and generators must meet, effective Dec. 10 for acceptance of orders and effective Feb. 1, 1943 for making and acceptance of deliveries.

Special enclosures are allowed for motors only under certain conditions.

Restrictions on types of motors also set up minimum base DC speeds and state that no motor shall be on direct current unless that is the only current available to users.

Order L-221 also establishes standards to apply in determining horsepower loads for motor ratings, and states that these ratings must be determined by test or by careful calculation or comparison with known requirements of similar apparatus.

Speed of motors can be the highest practicable for purposes for which purchased, provisions permit, except that all AC motors of 25 horsepower and below must have a synchronous speed of at least 1,800 r.p.m. at 60 cycles (four pole winding), and corresponding speeds at other frequencies. If the purchaser and the manufacturer can show that this speed is not practical for such AC equipment, however, this provision will be waivered.

All orders placed after Dec. 10, and all deliveries made after Feb. 1 on orders placed before Dec. 10, must bear certification to the manufacturer from the purchaser that he has met certain conditions, states the regulation. These include assurance that he has no adaptable idle motors or generators in his possession; that he has tried to obtain used equipment from at least three dealers; that the motor is not to replace existing equipment; that the motor is needed for immediate installation and meets mechanical requirements of L-221; and that the horsepower rating has been determined as set up in the order's earlier provisions. Such certification is to be signed by a duly authorized representative of the employer, rules the regulation, and may be referred to in placing consequent orders for identical motors and generators.

A manufacturer acting on this certification "shall not be held responsible for any action taken by him under this order in reliance upon inaccurate or untrue statements unless he has reason to believe that such statements are inaccurate or untrue," the new order allows.

Index of Advertisers

Acme Industries, Inc. 32
Alco Valve Co. 19
Allied Store Utilities 8
Alter Co., Harry 26
Aluminum Company of America 17
American Coils, Inc. 12
American Injector Co. 28
Ansul Chemical Co. 27
Baker Ice Machine Co., Inc. 27
Brunner Manufacturing Co. 14
Bundy Tubing Co. 25
Bush Manufacturing Co. 36
Central Service Supply Co. 31
Chicago Seal Co. 34
Copeland Refrigeration Corp. 3
Cordley and Hayes 4
Curtis Refrigerating Machine Div. 29
Davison Chemical Corp. 30
Day and Night Mfg. Co. 34
Detroit Lubricator Co. 10
Dole Refrigerating Co. 34
E. I. du Pont de Nemours & Co., Inc. (Electrochemicals Dept.) 20
Ebco Manufacturing Co. 22
Electrimatic Div. of Simoniz Co. 29
Fedders Manufacturing Co., Inc. 34
Filtrine Manufacturing Co. 14
General Refrigeration Div. Yates-American Machine Co. 17
Gilmer Co., L. H. 24
Goldberg Co., Herman 32
Henry Valve Co. 2
Highside Chemicals Co. 32
Imperial Brass Mfg. Co. 20
Jarrow Products 6
Kerotest Manufacturing Co. 13
Kold-Hold Mfg. Co. 34
Kramer Trenton Co. 34
La Crosse Novelty Box Mfg. Co. 29
Larkin Coils, Inc. 34
Lindsay Structure Div., Dry-Zero Corp. 31
Lynch Manufacturing Corp. 11
Marsh Corp., Jas. P. 22
Master Manufacturing Corp. 17
McCord Radiator & Mfg. Co. 28
McCray Refrigerator Co. 35
McIntire Connector Co. 28
Merchant & Evans Co. 35
Midwest Manufacturing Co. 30, 34
Mills Novelty Co. 10
Minneapolis-Honeywell Regulator Co. 6
Mueller Brass Co. 33
Northern Indiana Brass Co. 30
Penn Brass & Copper Co., Inc. 25
Penn Electric Switch Co. 15
Puro-Filter Corp. of America 15
Ranco, Inc. 34
Refrigeration Appliances, Inc. 35
Refrigeration Economics Co. 21
Refrigeration Engineering, Inc. 34
Refrigeration Service, Inc. 4
Reol Co. 28
Research Products Corp. 29
Servel, Inc. 7
Service Parts Co. 34
Spoehrer-Lange Co. 16
Stangard-Dickerson Corp. 33
Superior Valve and Fittings Co. 26
Swift Manufacturing Co. 28, 30
Tecumseh Products Co. 8
Temprite Products Corp. 23
Tyler Fixture Corp. 34
Universal Cooler Corp. 5
Virginia Smelting Co. 24, 5
Wagner Electric Corp. 34
Weatherhead Co. 9
White-Rodgers Electric Co. 4
Wilson Cabinet Co. 23
Wolverine Tube Div. of Calumet & Hecla Consol. Copper Co. 34

CLASSIFIED ADVERTISING

RATES for "Positions Wanted," 5¢ per word; minimum charge, $2.50. Three consecutive insertions, 12½¢ per word; minimum charge, $6.25.

RATES for all other classifications, 10¢ per word, minimum charge, $5.00 per insertion. Three consecutive insertions, 25¢ per word, minimum charge, $12.50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count.

POSITIONS WANTED

REFRIGERATION SERVICE Engineer: 20 years' experience, all types refrigeration equipment; domestic, commercial, air conditioning, soda fountain, dairy, and ship refrigeration. First-class references. American citizen. Age 46, good health, willing to travel and would consider foreign residence. Address: E. R. Harris, Box 28, U.S.N.O.B., Guantanamo Bay, Cuba.

POSITIONS AVAILABLE

ADVERTISING MANAGER—Are you an assistant itching to run your own "show?" Small fast-growing company with excellent reputation in field of refrigeration, air conditioning, and industrial specialties. Plenty of rope to hang yourself—trade journal copy, direct mail, publicity, house organ, catalogs and sales promotion. Technical or industrial background preferred. Location St. Louis. Advise qualifications, salary expected, and draft status. Box 1421, Air Conditioning & Refrigeration News.

M&E EST. 1866
COMPRESSORS FOR EVERY COMMERCIAL PURPOSE
Write for catalog
Merchant & Evans Co.
PHILADELPHIA, PENNA.

KRACK

HEAT TRANSFER EQUIPMENT IS ASSISTING OUR ARMED FORCES ON ALL FRONTS TO CRACK

THE AXIS

We manufacture a complete line of heat transfer equipment including lowside water and electric defrost low temperature refrigerating units, air conditioning equipment for industrial processing, and any apparatus using heat transfer surface.

KRACK HEAT TRANSFER APPLIANCES

ADVANCED DESIGN

ECONOMICAL OPERATION

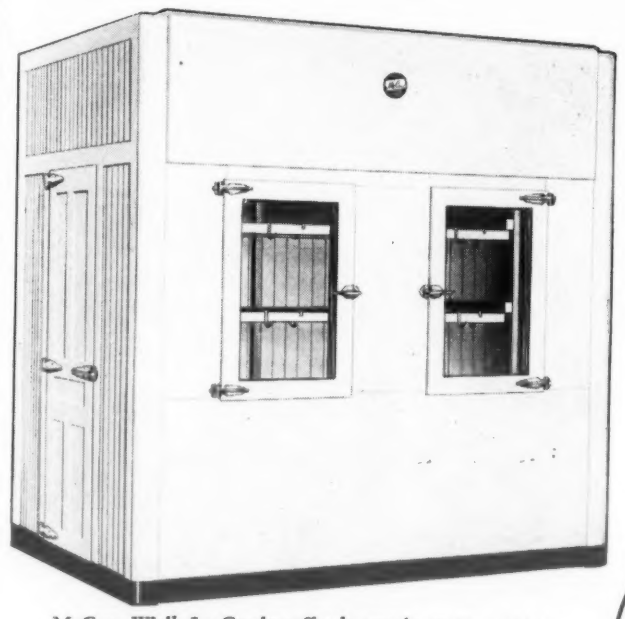
DEPENDABLE SERVICE

REFRIGERATION APPLIANCES, Inc.

923 W. LAKE ST.
CHICAGO, ILLINOIS

McCRAY

REFRIGERATORS Save FOOD

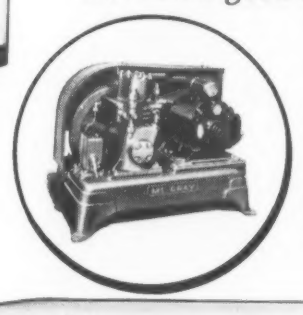


McCray Walk-In Cooler affords ample storage space. Two convenient service doors.

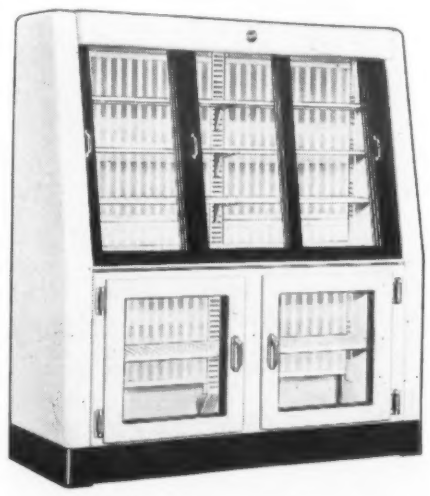
● WITH THE NEEDS of our fighters, our allies and our own civilian population threatening a shortage of important foods, any preventable waste amounts to sabotage. McCray quality construction and triple-balanced refrigeration saves food—keeps perishables fresh, healthful and nutritious.

McCray pioneered in the field of commercial refrigeration—our line is backed by 53 years' experience in meeting the needs of food stores, restaurants, hotels, hospitals and institutions.

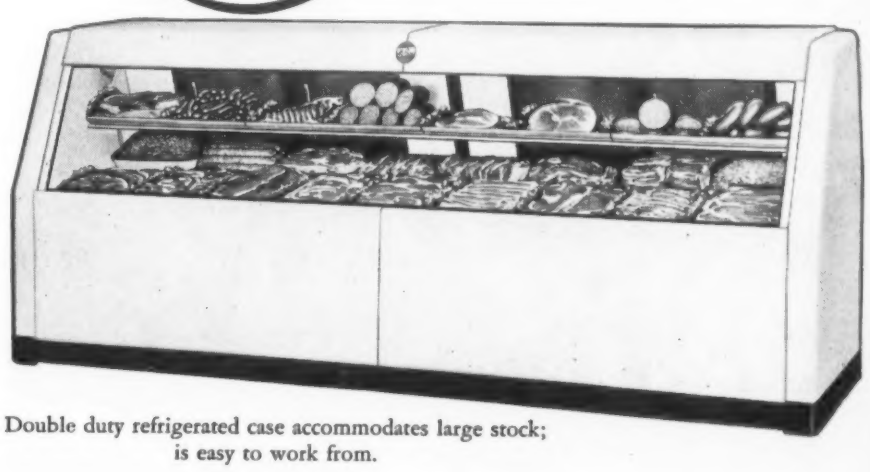
To replace inefficient, wasteful equipment with modern, food-saving, economical McCray refrigerators is more than good business—it's an important contribution to the war effort. All McCray models may be sold under simple priority regulations. Inquiries are invited... no obligation.



McCray compressors, coils and cabinets are designed and engineered for use together, assuring efficient, economical refrigeration.



Wall Cabinet refrigerator especially designed for dairy products.



Double duty refrigerated case accommodates large stock; is easy to work from.

McCRAY REFRIGERATOR COMPANY

395 McCRAY COURT, KENDALLVILLE, INDIANA

Preliminary Studies Done, Industries Selected For Concentration May Learn Plans Soon

NEW YORK CITY—Preliminary surveys of consumer goods industries in which the concentration of production is desirable for the war effort are being concluded, and detailed programs will be developed by the WPB leading to the selection of firms for continued production, Joseph L. Weiner, director of the Office of Civilian Supply of the WPB, stated before the annual meeting of the American Standards Association held here recently.

Discussing the first WPB move for concentration of industry—that of stoves—he indicated that the experience gained will be highly valuable in further development of the program.

So far as metals are concerned, Mr. Weiner stated the question is not one of new production, "but maintenance of what we have in consumer goods inventories." He reported that only 1½% of the steel produced next year will go into consumer products and but 6% of the copped used in 1940. Virtually no high grade aluminum will be available for the consumer use in 1943.

Mr. Weiner did not reveal which of the industries will be concentrated, adding that at this time no information was available on the number of plants which will be affected by the concentration plans.

In addition to increasing our war potential, concentration has been adopted as a policy by the WPB, he emphasized, to "guarantee what people must have at prices they can afford to pay." The program will not be copied from any other nations at war, Mr. Weiner stated.

"Concentration may be necessary because of essential civilian supply is so small a proportion of the capacity of an industry that if the production were shared among all the plants within the industry according to their past business, none could be kept going," Mr. Weiner explained.

Describing the concentration order issued last May on cooking and heating stoves as a "maiden effort," Mr. Weiner pointed out that it excluded large firms from production and also small plants in areas where labor was scarce. Only small producers in "easy" labor markets were permitted to make the stoves.

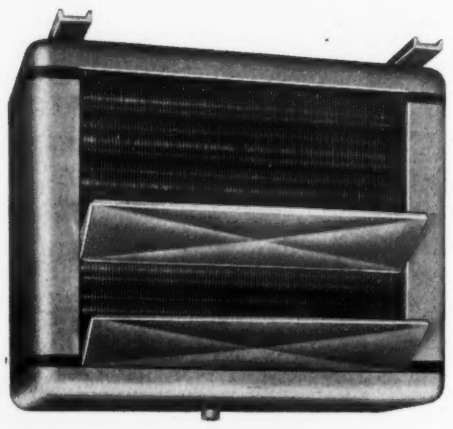
Difficulties were encountered, Mr. Weiner admitted, but he held they were largely due to unsatisfactory control of scarce materials, a situation due to be improved by the controlled materials plan.

Some plants had difficulties in producing the simplified and lighter type of stove, but above all the armed services found it necessary to order in considerably greater quantities than were expected at the time the concentration order was issued.

"Looking back over the experience with stove concentration," Mr. Weiner said, "I would draw two major conclusions. First, some industries that are concentrated will need assistance to avaid delay in adapting themselves to concentration. Second, When production is concentrated a sufficient cushion of unused capacity must be provided to allow not only for mistakes that are inevitable, but also for unseen turns which the war will take.

"There are two other equally important considerations in the concentration program. Wherever possible the plants withdrawn from civilian production will be those most adaptable to war production. Furthermore the WPB is required under the Smaller War Plant Act to use its power to direct the flow of scarce materials so as to make possible the greatest use of small plants in the production of both war material and essential civilian production."

Ammunition for the Civilian Front-



STANDARD UNIT COOLERS (Left)

Bush Standard Unit Coolers have established an unexcelled reputation for dependable performance, economical operation, and sturdy construction. New models are beautifully streamlined with casings of corrosion resistant steel finished in crackled gray. Large capacity cores with ample tube surface for balanced operation.

HEAVY DUTY COOLERS (Right)

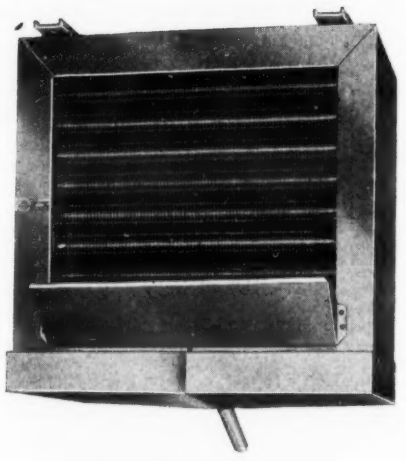
1. Wide selection of capacities to meet requirements of any job. 2. Meets Government specifications. 3. Available for temperatures above or below 32° F. (water defrosting for temperatures below 32°). 4. Compact, neat design. Only finest materials and parts used. 5. Furnished with top or front discharge. 6. Designed for convenient installation and service.

STANDARD PANEL COOLERS (Left)

Bush Standard Panel Coolers are especially efficient for Low Ceiling Market Coolers where space is small and high capacity refrigeration is needed. Bush Standard Panel Coolers are ideal for this application. The compact design, giving balance between amount of surface and air speed, assures excellent humidity control and high efficiency in operation.

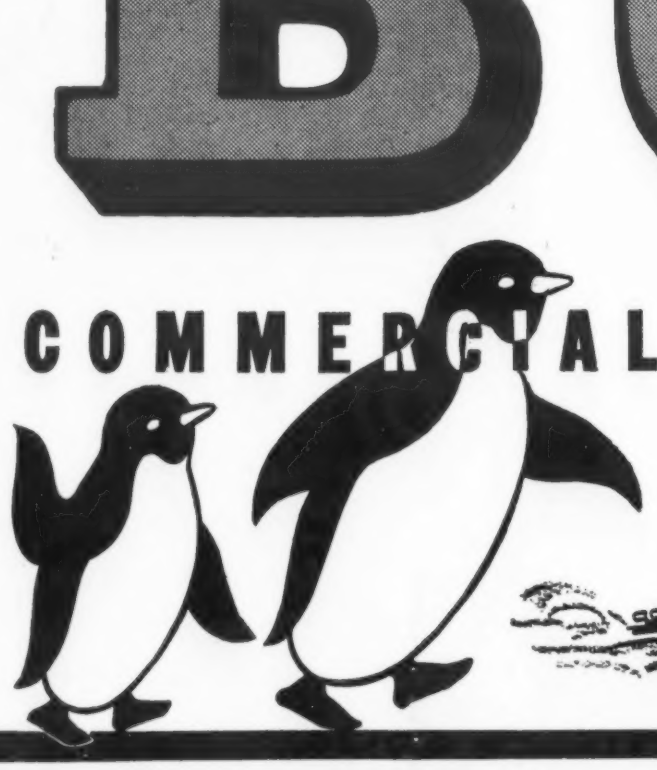
WATER DEFROST UNIT COOLERS (Right)

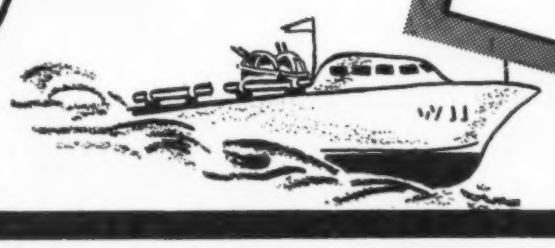
Bush Recold Water Defrost Unit Coolers incorporate a completely new method of defrosting using ordinary tap water. For low temperature refrigeration below 32° F. these units are unexcelled.



BUSH

COMMERCIAL COOLERS





Bush Finned Tube Products are serving America in the Army, Navy, Air Corps and Merchant Marine . . . air conditioning submarines and bombers, cooling battleships and tanks, refrigerating cargo ships and cantonments. Although war production comes first, Bush still produces for essential civilian needs. Expert engineering, farsighted control of materials, long manufacturing experience, and highly specialized equipment . . . all contribute to make Bush Finned Tube Products still, as always, the finest obtainable.

HARTFORD, CONNECTICUT
415 LEXINGTON AVE., NEW YORK
549 W. WASHINGTON BLVD., CHICAGO

Bush Mfg. Co.